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**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

In the Matter of the Application of Pacific Gas
and Electric Company for Approval of its
Electric Vehicle Infrastructure and Education
Program

A.15-02-009

U 39 E

**PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E)
SUPPLEMENT TO APPLICATION PURSUANT TO JOINT
ASSIGNED COMMISSIONER AND ADMINISTRATIVE
LAW JUDGE'S SCOPING MEMO AND RULING**

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Dated: October 12, 2015

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

In the Matter of the Application of Pacific Gas
and Electric Company for Approval of its
Electric Vehicle Infrastructure and Education
Program (U39E)

U 39 E

A.15-02-009

(Filed February 9, 2015)

**PACIFIC GAS AND ELECTRIC COMPANY'S (U 39 E)
SUPPLEMENT TO APPLICATION PURSUANT TO JOINT
ASSIGNED COMMISSIONER AND ADMINISTRATIVE
LAW JUDGE'S SCOPING MEMO AND RULING**

Pursuant to Ordering Paragraph 1 of the September 4, 2015, Joint Assigned Commissioner and Administrative Law Judges' Scoping Memo and Ruling, Pacific Gas and Electric Company (PG&E) provides its supplement to its Application. The supplement consists of "Supplemental Testimony in Compliance With Joint Assigned Commissioner and Administrative Law Judges' Scoping Memo and Ruling" (Supplemental Testimony). The Supplemental Testimony is attached to this pleading as Attachment 1.

Respectfully Submitted,

CHRISTOPHER J. WARNER

By: /s/ Christopher J. Warner
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Dated: October 12, 2015

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ATTACHMENT 1

Application: 15-02-009
(U 39 E)
Exhibit No.: _____
Date: October 12, 2015
Witness(es): Various

PACIFIC GAS AND ELECTRIC COMPANY

ELECTRIC VEHICLE INFRASTRUCTURE AND EDUCATION PROGRAM

SUPPLEMENTAL TESTIMONY



PACIFIC GAS AND ELECTRIC COMPANY
ELECTRIC VEHICLE INFRASTRUCTURE AND EDUCATION PROGRAM
SUPPLEMENTAL TESTIMONY

TABLE OF CONTENTS

Chapter	Title	Witness
	SUPPLEMENTAL TESTIMONY IN COMPLIANCE WITH JOINT ASSIGNED COMMISSIONER AND ADMINISTRATIVE LAW JUDGE’S SCOPING MEMO AND RULING	David B. Almeida Donna L. Barry Jeffrey P. Borders Jana R. Corey Michael D. Della Penna Nielson D. Jones Daniel R. Pease
Appendix A	PROPOSED METRICS	
Appendix B	PROGRAM DETAILED COST	
Appendix C	STATEMENT OF QUALIFICATIONS	Jana R. Corey

PACIFIC GAS AND ELECTRIC COMPANY
SUPPLEMENTAL TESTIMONY
IN COMPLIANCE WITH JOINT ASSIGNED COMMISSIONER AND
ADMINISTRATIVE LAW JUDGE'S SCOPING MEMO AND
RULING

PACIFIC GAS AND ELECTRIC COMPANY
ELECTRIC VEHICLE INFRASTRUCTURE AND EDUCATION PROGRAM
SUPPLEMENTAL TESTIMONY

TABLE OF CONTENTS

A. Introduction [Witness: Jana R. Corey]	1
B. PG&E Phase 1 Compliant Proposal Pursuant to September 4, 2015 Scoping Memo and Ruling	4
1. Description [Witness: Jana R. Corey].....	4
2. Transition Plan to Phase 2 [Witness: Jana R. Corey].....	6
3. Capital and Expense Forecast [Witness(es): Jana R. Corey, Jeffrey P. Borders, David B. Almeida, Michael D. Della Penna].....	7
4. Program Costs and Results of Operations [Witness(es): Michael D. Della Penna and Niel Jones]	9
5. Cost Recovery and Rate Design [Witness: Donna L. Barry and Dan Pease]	10
C. PG&E Phase 1 Enhanced Proposal	10
1. Description [Witness: Jana R. Corey].....	10
2. Transition Plan to Phase 2 [Witness: Jana R. Corey].....	12
3. Capital and Expense Forecast [Witness(es): Jana R. Corey, Jeffrey P. Borders, David B. Almeida, Michael D. Della Penna].....	13
4. Program Costs and Results of Operations [Witness(es): Michael D. Della Penna and Niel Jones]	15
5. Cost Recovery and Rate Design [Witness: Donna L. Barry and Dan Pease]	15
D. Responses to ALJ Ruling Questions [Witness: Jana R. Corey].....	16
1. Question 1: Does the proposed EV Program meet the balancing test established in D.11-07-029 and described in D.14-12-079? If so, how? If not, why not?	16
2. Question 2: What benefits, if any, does PG&E's installation of DCFC offer that are not already being offered by other market participants throughout their service territory? Do those benefits merit the incremental cost of DCFC within the program? What is the current state of competition and concentration in the DCFC market?	27

PACIFIC GAS AND ELECTRIC COMPANY
ELECTRIC VEHICLE INFRASTRUCTURE AND EDUCATION PROGRAM
SUPPLEMENTAL TESTIMONY

TABLE OF CONTENTS
(CONTINUED)

3. Question 3: What information and data should PG&E collect during the initial phase of its program? What analysis should be conducted to determine the merit of a second phase, and who should conduct that analysis?	31
4. Question 4: What transition mechanisms should be established between an initial phase and a potential second phase to allow adequate time for regulatory review of the initial phase while also minimizing market uncertainty and discontinuity during the review period?	32
E. Conclusion.....	34

1 **PACIFIC GAS AND ELECTRIC COMPANY**
2 **ELECTRIC VEHICLE INFRASTRUCTURE AND EDUCATION**
3 **PROGRAM**
4 **SUPPLEMENTAL TESTIMONY**

5 **A. Introduction [Witness: Jana R. Corey]**

6 Pursuant to the September 4, 2015, Joint Assigned Commissioner and
7 Administrative Law Judge's Scoping Memo and Ruling (Ruling), the purpose of
8 this supplemental testimony is to provide a more phased deployment approach
9 to Pacific Gas and Electric Company's (PG&E) Electric Vehicle (EV)
10 Infrastructure and Education Program (EV Program) and to respond to questions
11 posed in the Ruling. While PG&E appreciates the Ruling's desire for more
12 explicit phasing, PG&E respectfully believes a Phase 1 deployment of only 2,510
13 charging stations over 24 months does not meet the stated program objectives
14 or provide sufficient data or learnings to adequately inform a potential Phase 2
15 deployment. As a result, PG&E offers both the requested compliant proposal
16 and a modestly expanded phased and enhanced proposal:

- 17 • PG&E's compliant proposal limits Phase 1 to 2,510 charging stations (10%
18 of original proposal), deployed over 24 months from the date of first
19 construction, including 18 months of data collection and a comprehensive
20 proposal for transitioning from Phase 1 to Phase 2. PG&E's compliant
21 proposal totals \$70 million in capital costs and \$17 million in expense
22 amounts, with deployment over a 24-month timeframe.
- 23 • PG&E's enhanced proposal will deploy a maximum of 7,530 EV charging
24 stations over no more than 36 months from the date of first construction, in
25 order to collect and report 30 full months of information from deployed EV
26 stations to better inform PG&E's Phase 2 EV Program proposal. The
27 enhanced proposal totals \$187 million in capital costs and \$35 million in
28 expense amounts, with deployment over a 36-month timeframe.
- 29 • As required by the Ruling, both the compliant and enhanced proposals
30 include a "bridge funding" transition mechanism to minimize market
31 uncertainty and discontinuity during the Phase 2 Commission review period.
- 32 • In addition, both the compliant and enhanced proposals provide for
33 collection of specific data and information during Phase 1 similar to data

1 collection proposals agreed to by parties in the Southern California Edison
2 Company (SCE) and San Diego Gas & Electric Company (SDG&E)
3 settlements, as well as creation of a formal Advisory Committee of
4 stakeholders to advise PG&E on its Phase 1 and Phase 2 programs.

5 While PG&E's compliant Phase 1 proposal meets the 10 percent, 24-month
6 bounds of the Ruling, PG&E continues to recommend that small scale EV
7 infrastructure deployment will not make meaningful progress towards the State's
8 goals outlined in the Governor's Zero Emission Vehicle (ZEV) Action Plan.¹ In
9 addition to the Governor's stated goals, the California Legislature recently
10 passed and the Governor signed into law Senate Bill (SB) 350,² which clearly
11 states the need for investor-owned utilities "to increase access to the use of
12 electricity as a transportation fuel" in order to reduce greenhouse gas
13 (GHG) emissions by encouraging widespread transportation electrification.
14 Supporters of SB 350 have cited the role of utilities in enhancing the ability of
15 electric vehicles to compete with gasoline-powered vehicles as a major
16 alternative to GHG-emitting vehicles.³ Pilot-scale deployments do not achieve
17 this end.

18 From a practical standpoint, an initial EV program that only collects data and
19 results from a small number of EV charging stations over only a 2-year period is
20 not likely to provide sufficient data or information to adequately evaluate the
21 benefits of a larger scale program or inform changes necessary for a broader
22 scale roll out of new EV infrastructure for workplace, multi-family and public
23 charging throughout PG&E's service area.

24 A program of 2,510 charging stations, under PG&E's program design, yields
25 approximately 290 sites. Given that these sites will be split between different
26 location types (workplaces, multi-unit dwellings, retail, and public locations),

1 Governor's Interagency Working Group on Zero-Emission Vehicles, 2013 ZEV Action
Plan (ZEV Action Plan), February 2013,
[http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_\(02-13\).pdf](http://opr.ca.gov/docs/Governor's_Office_ZEV_Action_Plan_(02-13).pdf).

2 Senate Bill 350,
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB350.

3 See, e.g., "California's New Climate Law Encourages Electricity Industry to Compete
Against Big Oil,"
<http://www.usnews.com/news/science/news/articles/2015/10/08/california-grooms-utility-giants-to-compete-against-big-oil>.

1 there may be a limited number of each type of site, which may result in an
2 insufficient sample size for drawing conclusions to inform a potential Phase 2
3 deployment program. Further, a 2-year initial phase, including an initial ramp up
4 period, is simply too short to gather sufficient data for meaningful results. A
5 3-year initial phase, as outlined in PG&E's enhanced proposal, will generate a
6 sufficient amount of data to inform the next phase of deployment. Similar sized
7 programs during earlier Electric Vehicle Supply Equipment (EVSE) deployments
8 across the country, such as the EV Project (12,000 Level 2, 100 Direct Current
9 Fast Chargers (DCFC) stations) and ChargePoint America (4,600 Level 2
10 stations), both funded by the national American Reinvestment and Recovery
11 Act, included three years of data collection and evaluation.⁴

12 PG&E acknowledges that some parties support a more restricted and
13 phased approach to utility EV infrastructure deployment. However, adding a
14 Phase 2 evidentiary proceeding and additional Commission review, which could
15 take 12 to 18 months before reaching a final decision, risks slowing critical
16 deployments of Electric Vehicle Supply Equipment (EVSE) in one of the largest
17 electric vehicle markets in the world. If the Commission wishes to approve a
18 more clear separation between an initial phase and subsequent phase while
19 also minimizing market uncertainty and discontinuity during the review period,
20 then PG&E recommends that the Commission provide adequate time and scope
21 for the initial phase. PG&E's enhanced proposal allows collection of sufficient
22 information and results about the initial deployment and allows sufficient time for
23 stakeholders to review reported results in order to inform the consideration of
24 subsequent phases.

25 A key benefit to PG&E's infrastructure program is the opportunity to assess
26 how the charging stations deployed may support the grid via renewable
27 integration programs as well as traditional demand response. In order to
28 effectively evaluate the potential value of EVs as a grid resource, it also is
29 important that PG&E have sufficient time to collect a minimum of two years of
30 charging behavior data during pivotal spring and summer periods.

31 However the Commission chooses to proceed, in light of SB 350 and the
32 Commission's Decision (D.) 14-12-079 endorsing utility participation in EV

4 <http://avt.inl.gov/chargepoint.shtml>; <http://avt.inl.gov/evproject.shtml#ReportsAndMaps>.

1 infrastructure deployment, the Commission must recognize it is at a crossroads:
2 it can either support utility investment in EV infrastructure that makes a
3 significant contribution to California's transportation electrification goals, or it can
4 return to its prior policy of limiting utility investment to "pilot" programs and
5 traditional utility infrastructure that does not enable a more widespread
6 deployment of charging stations. The Commission needs to act now to provide
7 precise guidance, either way.

8 PG&E's more detailed testimony below outlines its two different Phase 1 EV
9 proposals. As requested, both proposals provide for a "bridge" mechanism in
10 order to smoothly transition to Phase 2. PG&E's enhanced proposal provides
11 what the utility believes is sufficient time for the Commission and interested
12 parties to evaluate the data and PG&E's Phase 2 EV proposal. PG&E
13 recommends that the Commission approve PG&E's enhanced proposal as a
14 more practical, effective phasing of PG&E's EV Program which will generate
15 sufficient data to inform the Commission and stakeholders and provide
16 improvements to PG&E's Phase 2 proposal, and allow the Commission to more
17 effectively evaluate PG&E's Phase 2 proposal.

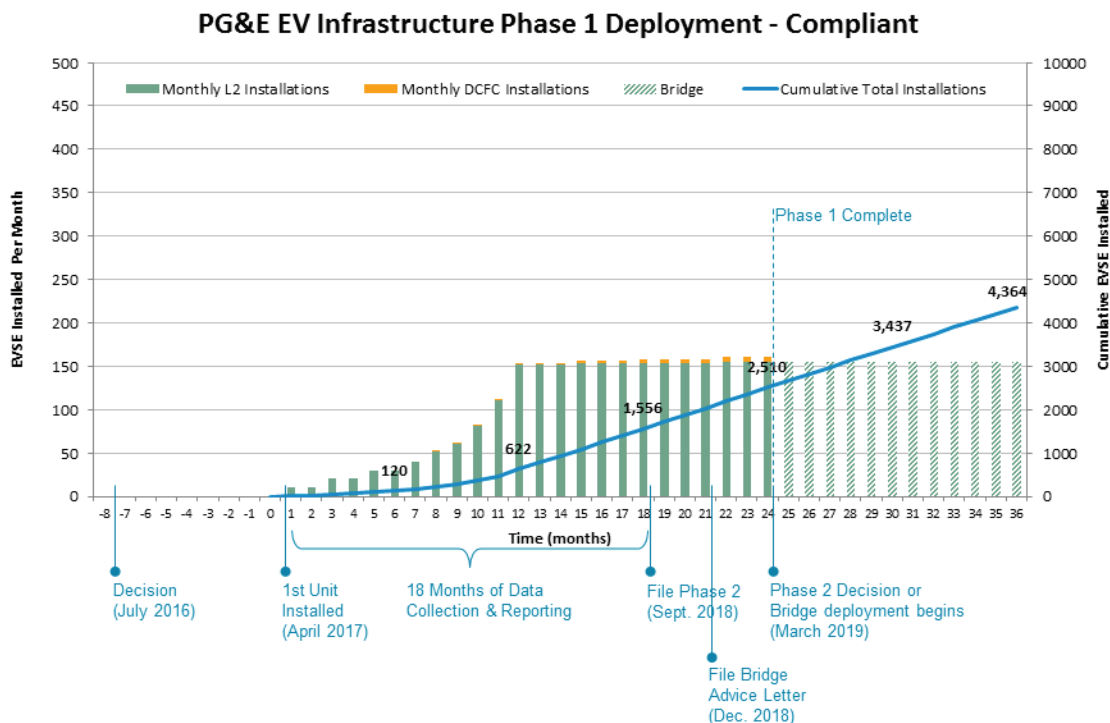
18 **B. PG&E Phase 1 Compliant Proposal Pursuant to September 4, 2015**
19 **Scoping Memo and Ruling**

20 **1. Description [Witness: Jana R. Corey]**

21 PG&E's Phase 1 compliant proposal complies strictly with the Ruling
22 that requires an initial phase of EV charging station deployment, limited to a
23 maximum of 10 percent of the total originally proposed number of charging
24 stations, to be deployed over no more than 24 months.⁵ PG&E's compliant
25 proposal includes deployment of 2,510 charging stations (2,460 Level 2 and
26 50 DCFC), deployed over 24 months from the time of first construction,
27 which PG&E assumes to begin on April 1, 2017. PG&E estimates it will
28 require approximately eight months from final program approval by the end
29 of July 2016 to begin construction at the first site. Figure 1 below provides
30 an illustrative deployment schedule for PG&E's compliant proposal.

5 Ruling, p. 7.

FIGURE 1
EV INFRASTRUCTURE DEPLOYMENT PLAN – COMPLIANT PROPOSAL



As illustrated in Figure 1 above, PG&E assumes the Commission approves a Phase 1 final decision by end of July 2016, construction of the first deployment begins in April 2017, and Phase 1 deployment is completed by end of March 2019. While data collection will begin with the first deployment, after the first 12 months PG&E currently expects that there will be approximately 600 operational Level 2 chargers and 6 DCFC sites. Only this subset of the deployment would provide more than 12 months of operating data prior to the end of Phase 1, which will include one spring and summer season for evaluation by the end of the 24-month Phase 1.

To assist the Commission in evaluating PG&E's subsequent EV program while avoiding customer and EV market uncertainty and discontinuity, PG&E proposes reporting quarterly the results and data from its EVSE deployments and operation, using as a model the data collection and reporting requirements agreed to by the settling parties in the SCE and SDG&E EV proceedings. Appendix A provides more detail regarding PG&E's proposed data and metrics to be collected and included in the quarterly reports.

1 **2. Transition Plan to Phase 2 [Witness: Jana R. Corey]**

2 PG&E proposes to file updated supplemental testimony providing its
3 proposal for Phase 2 EV infrastructure deployment no later than 18 months
4 from the first deployment of Phase 1. The testimony will include a detailed
5 assessment of the Phase 1 data and performance to date, and will describe
6 how its Phase 2 proposal incorporates Phase 1 results. During the
7 pendency of the Commission's consideration of PG&E's Phase 2 proposal,
8 PG&E will continue to report its Phase 1 data quarterly and the data and
9 reports will be included in the record of the Phase 2 proceeding. This
10 provides the Commission with the remaining six months of Phase 1 to reach
11 a decision on Phase 2.

12 If the Commission issues a final decision before the end of the 24-month
13 Phase 1 deployment, there will be no interruption, confusion or market
14 uncertainty or discontinuity regarding PG&E's subsequent EV infrastructure
15 deployment. However, if the Commission for whatever reason does not
16 issue a Phase 2 decision before the end of Phase 1, PG&E will be
17 authorized to "bridge" the gap in its EV Program. PG&E proposes to
18 continue deploying and recovering costs of EV charging infrastructure for an
19 additional 12 months at a deployment and expenditure rate no faster and no
20 greater than the average monthly rate of deployment and costs recorded
21 during the six months preceding the end of Phase 1. PG&E's authorization
22 for its "bridge" program and funding will be filed in a Tier 2 advice filing at
23 least three months before the end of Phase 1 and will provide the detailed
24 deployment schedule and cost cap applicable to the additional year of EV
25 deployment and funding, subject to true-up for the final results from
26 Phase 1.

27 This transition mechanism and bridge funding should provide the
28 Commission up to 18 months from the date of PG&E's filing to issue a final
29 decision on Phase 2. If the Commission still has not issued a final decision
30 on PG&E's Phase 2 proposal at the end of the 12-month bridge period
31 (effectively months 24-36 in Figure 1), PG&E will file a petition for
32 modification of the Commission's Phase 1 decision for continued funding
33 and deployment for an additional year, and the Commission will commit to

1 act on the petition for modification within three months, subject to written
2 comment and at least one public workshop prior to the decision.

3 PG&E's proposed transition mechanism balances the need for adequate
4 time for Commission review of the results of Phase 1, with the need for
5 customer and EV market certainty and continuity between phases of the
6 utility EV programs.

7 **3. Capital and Expense Forecast [Witness(es): Jana R. Corey,**
8 **Jeffrey P. Borders, David B. Almeida, Michael D. Della Penna]**

9 PG&E has developed detailed revised capital cost and expense
10 forecasts in support of the compliant proposal. The compliant proposal
11 totals \$70 million in capital costs and \$17 million in expense amounts over
12 the proposal timeframe. The forecasts have been developed using the
13 same costing and estimating methods used in PG&E's February 9, 2015,
14 prepared testimony. The forecasts also follow the guidance of the Ruling by
15 adjusting PG&E's cost forecasts to reflect the reduced scope of Phase 1 and
16 to identify and separate costs between Level 2 and DCFC infrastructure.

17 The following key assumptions are included in these detailed revised
18 capital and cost forecasts and represent changes from the assumptions in
19 PG&E's February 9, 2015, prepared testimony. In all other respects, the
20 assumptions and methodology used in PG&E's February 9, 2015, prepared
21 testimony remain the same and are incorporated by reference in this
22 supplemental testimony.

23 a. Changes in assumptions:

- 24 • 50 DCFCs instead of 100 DCFCs in original application
- 25 • 2,460 L2s instead of 25,000 L2s in original application
- 26 • Reduced Education and Outreach costs
 - 27 – Adjusted costs and activities to reflect the updated Phase 1
 - 28 timeline.
 - 29 – Eliminated funding for general EV calls and specific targeted
 - 30 outreach tactics (e.g., billboards and bill inserts).

- Reduced budget from \$5 million to \$3.3 million to fund innovative programs designed to increase access to EVs in disadvantaged communities.⁶
- Adjusted Information Technology (IT) costs
 - Timing and duration changed to reflect Phase 1
- Reduced Program Management Organization (PMO) budget from \$45.8 million to \$10.4 million to reflect the reduction in program scale. The scaled approach includes fixed cost activities such as vendor contract negotiations and new process implementations that are unchanged by the reduced scope.⁷

The following tables provide PG&E’s summary cost forecasts for the Phase 1 compliant proposal and follow the same categories in PG&E’s February 9, 2015, prepared testimony, except for identification and separation of the costs by type of charging. In addition, more detailed cost information regarding the Phase 1 compliant proposal is included in Appendix B consistent with the presentation in PG&E’s February 9, 2015, prepared testimony.

⁶ See “Disadvantaged Communities” line item in Table B-2 of Appendix B (line 40).

⁷ See “Program Management Organization” subtotals in Table B-2 of Appendix B (lines 57 and 62).

TABLE 1
EV PROGRAM – COMPLIANT PROPOSAL
FORECAST CAPITAL COSTS (2016-2019)
(THOUSANDS OF NOMINAL DOLLARS)

Line No.	Description	Amount
1	EV Charger Infrastructure – L2	\$45,311
2	EV Charger Infrastructure – DCFC	11,921
3	Site Acquisition Support and Market Education and Outreach	3,405
4	Program Management Organization	9,522
5	Total	\$70,158 ^(a)

(a) Any discrepancies in total are due to rounding.

TABLE 2
EV PROGRAM – COMPLIANT PROPOSAL
FORECAST EXPENSE AMOUNTS (2016-2019)
(THOUSANDS OF NOMINAL DOLLARS)

Line No.	Description	Amount
1	EV Charger Infrastructure – L2	\$5,759
2	EV Charger Infrastructure – DCFC	568
3	Site Acquisition Support and Market Education and Outreach	10,016
4	Program Management Organization	906
5	Total	\$17,249

4. Program Costs and Results of Operations [Witness(es):

Michael D. Della Penna and Niel Jones]

For the purposes of deployment of its Phase 1 compliant proposal, PG&E assumes that the Phase 1 approval occurs by the end of July 2016 and that deployment will take place over the 2-year period from April 1, 2017 through March 31, 2019, subject to the transition plan in Section B above.

Table 3 below provides the resulting forecast revenue requirement request for 2017-2022 for the Phase 1 compliant proposal. In all other respects, the methodology and assumptions in Chapter 6 of PG&E's February 9, 2015, prepared testimony apply to these forecast program costs and results of operation.

TABLE 3
2017-2022 COMPLIANT PROPOSAL REVENUE REQUIREMENT REQUEST
(THOUSANDS OF DOLLARS)

Line No.	2017	2018	2019	2020	2021	2022
1	4,650	15,465	15,977	13,106	12,117	9,647

5. Cost Recovery and Rate Design [Witness: Donna L. Barry and Dan Pease]

PG&E's proposed cost recovery and rate design for its Phase 1 compliant proposal are the same as proposed in Chapter 7 of PG&E's February 9, 2015, prepared testimony.

C. PG&E Phase 1 Enhanced Proposal

1. Description [Witness: Jana R. Corey]

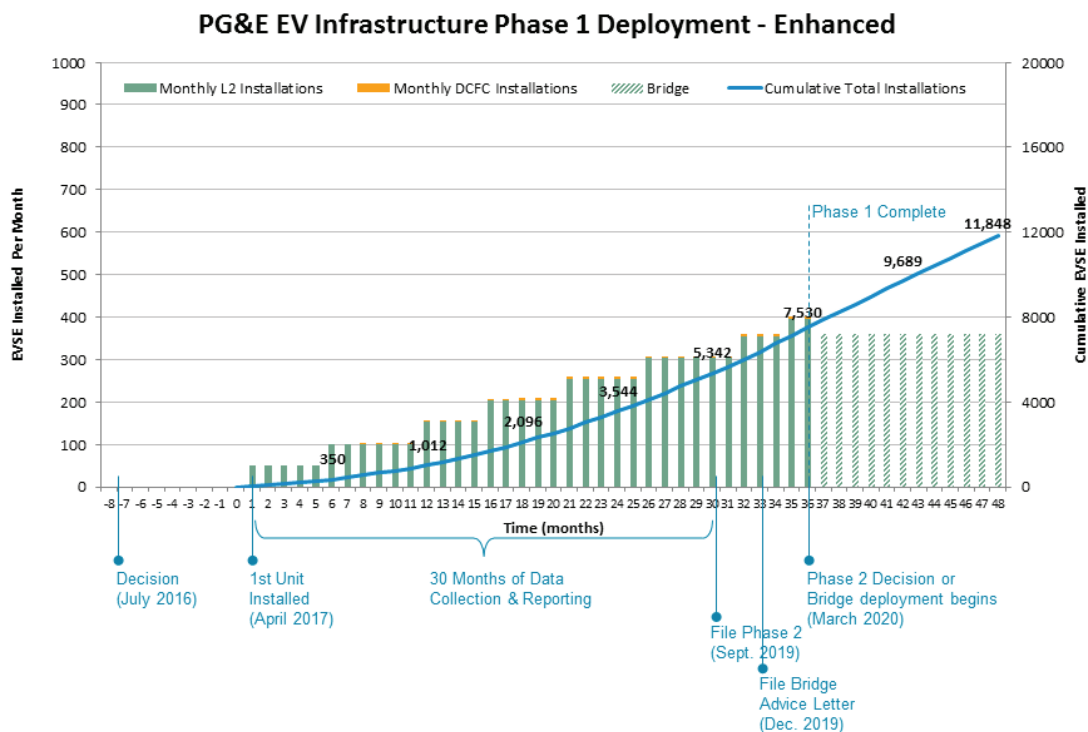
As discussed above, a Phase 1 deployment of 2,510 charging stations over 24 months, as described in Section B above, does not meet the stated program objectives or provide sufficient data or learnings to adequately inform a potential Phase 2 deployment. As a result, PG&E's enhanced proposal includes a recommendation for a somewhat longer and larger Phase 1 EV Program than requested by the Ruling, in order to provide sufficient time and information to inform PG&E's Phase 2 proposal.

PG&E's enhanced proposal will deploy a maximum of 7,530 EV charging stations (7,430 Level 2 and 100 DCFC) over no more than 36 months from the date of first construction, in order to collect and report a full 30 months of information from deployed EV stations sufficient to evaluate PG&E's Phase 2 EV Program proposal. This Phase 1 duration would allow for more thorough data collection. As depicted in Figure 2, approximately 3,500 chargers will have been active for one full year by the end of Phase 1, with over 1,000 chargers operational for two full years, and data from these operational chargers will provide usage insights through two years of pivotal seasons—spring and summer. In contrast to the compliant proposal, the enhanced proposal will result in more robust data informing the Commission and stakeholders regarding PG&E's Phase 2 proposal, and in addition, will provide a better understanding of how utilities may leverage EVs for vehicle grid integration. This includes both periods of

over-generation from increasing renewable resources (likely to occur during the spring) as well as peak load curtailment via traditional demand response (typically occurring during summer months).

Figure 2 below provides an illustrative deployment schedule for PG&E's enhanced proposal.

FIGURE 2
EV INFRASTRUCTURE DEPLOYMENT PLAN – ENHANCED PROPOSAL



As demonstrated in Figure 2 above, PG&E assumes the Commission approves a Phase 1 final decision by end of July 2016 and that deployment will take place over the three-year period from April 1, 2017 through March 31, 2020.

To assist the Commission in evaluating PG&E's subsequent EV Program while avoiding customer and EV market uncertainty and discontinuity, PG&E proposes reporting quarterly the results and data from its EVSE deployments and operation, using as a model the data collection and reporting requirements agreed to by the settling parties in the SCE and SDG&E EV proceedings. Appendix A provides more detail regarding

1 PG&E's proposed data and metrics to be collected and included in the
2 quarterly reports.

3 **2. Transition Plan to Phase 2 [Witness: Jana R. Corey]**

4 PG&E proposes to file updated supplemental testimony providing its
5 proposal for Phase 2 EV infrastructure deployment no later than 30 months
6 after Phase 1 deployments begin. The testimony will include a detailed
7 assessment of the Phase 1 data and performance to date, and will describe
8 how PG&E's Phase 2 proposal incorporates Phase 1 results. During the
9 pendency of the Commission's consideration of PG&E's Phase 2 proposal,
10 PG&E will continue to report its Phase 1 data quarterly and the data and
11 reports will be included in the record of the Phase 2 proceeding. This
12 provides the Commission with the remaining six months of Phase 1 to reach
13 a decision on Phase 2.

14 As discussed above, PG&E proposes the same transition mechanism to
15 apply to its Phase 1 enhanced proposal as would apply to its Phase 1
16 compliant proposal. If the Commission issues a final decision before the
17 end of the 36-month Phase 1 enhanced proposal deployment, there will be
18 no interruption, confusion or market uncertainty regarding PG&E's
19 subsequent EV infrastructure deployment. However, if the Commission for
20 whatever reason is unable to issue a Phase 2 decision before the end of
21 Phase 1, PG&E will be authorized to "bridge" the gap in its EV Program by
22 continuing to deploy and recover the costs of EV charging infrastructure for
23 an additional 12 months at a deployment and expenditure rate no faster and
24 no greater than the average monthly rate of deployment and costs recorded
25 during the six months preceding the end of Phase 1. PG&E's authorization
26 for its "bridge" program and funding will be filed in a Tier 2 advice filing at
27 least three months before the end of Phase 1 and will provide the detailed
28 deployment schedule and cost cap applicable to the additional year of EV
29 deployment and funding, subject to true-up for the final results from
30 Phase 1.

31 This transition mechanism and bridge funding should provide the
32 Commission up to 18 months from the date of PG&E's filing to issue a final
33 decision on Phase 2. If the Commission still has not issued a final decision
34 on PG&E's Phase 2 proposal at the end of the 12-month bridge period

(effectively months 37-48 in Figure 2), PG&E will file a petition for modification of the Commission's Phase 1 decision for continued funding and deployment for an additional year, and the Commission will commit to act on the petition for modification within three months, subject to written comment and at least one public workshop prior to the decision.

As discussed above, PG&E's proposed transition mechanism for both its compliant and enhanced proposals balances the need for adequate time for Commission review of the result of Phase 1, with the need for customer and EV market certainty and continuity between phases of the utility EV programs.

3. Capital and Expense Forecast [Witness(es): Jana R. Corey, Jeffrey P. Borders, David B. Almeida, Michael D. Della Penna]

PG&E has developed detailed revised capital cost and expense forecasts in support of the enhanced proposal. The enhanced proposal totals \$187 million in capital costs and \$35 million in expense amounts over the proposal timeframe. The forecasts have been developed using the same costing and estimating methods used in PG&E's February 9, 2015, prepared testimony. The forecasts also follow the guidance of the Ruling by adjusting PG&E's cost forecasts to reflect the reduced scope of Phase 1 and to identify and separate costs between Level 2 and DCFC infrastructure.

The following key assumptions are included in these detailed revised cost forecasts and represent changes from the assumptions in PG&E's February 9, 2015, prepared testimony. In all other respects, the assumptions and methodology used in PG&E's February 9, 2015, prepared testimony remain the same and are incorporated by reference in this supplemental testimony.

a. Changes in assumptions:

- 7,430 L2s instead of 25,000 L2s in original application
- 100 DCFC deployment plan adjusted to reflect the enhanced Phase 1 proposal
- Reduced Education and Outreach costs
 - Adjusted costs and activities to reflect the enhanced Phase 1 timeline.

- Eliminated funding for general EV calls and specific targeted outreach tactics (e.g., billboards and bill inserts).
- Reduced budget from \$5 million to \$3.8 million to fund innovative programs designed to increase access to EVs in disadvantaged communities.⁸
- Adjusted IT costs
 - Timing and duration changed to reflect the enhanced Phase 1 proposal.
- Reduced PMO budget from \$45.8 million to \$20.5 million to reflect the reduction in program scale. The scaled approach includes certain fixed cost activities such as vendor contract negotiations and new process implementations that are unchanged by the reduced scope.⁹

The following tables provide PG&E’s summary cost forecasts for the Phase 1 enhanced proposal and follow the same categories in PG&E’s February 9, 2015, prepared testimony, except for identification and separation of the costs by type of charging. In addition, more detailed cost information regarding the Phase 1 enhanced proposal is included in Appendix B.

TABLE 4
EV PROGRAM – ENHANCED PROPOSAL
FORECAST CAPITAL COSTS (2016-2022)
(THOUSANDS OF NOMINAL DOLLARS)

Line No.	Description	Amount
1	EV Charger Infrastructure – L2	\$139,932
2	EV Charger Infrastructure – DCFC	24,092
3	Site Acquisition Support and Market Education and Outreach	3,405
4	Program Management Organization	19,379
5	Total	\$186,808

⁸ See “Disadvantaged Communities” line item in Table B-4 of Appendix B (line 40).

⁹ See “Program Management Organization” subtotals in Table B-4 of Appendix B (lines 57 and 62).

TABLE 5
EV PROGRAM – ENHANCED PROPOSAL
FORECAST EXPENSE AMOUNTS (2016-2022)
(THOUSANDS OF NOMINAL DOLLARS)

Line No.	Description	Amount
1	EV Charger Infrastructure- L2	\$17,062
2	EV Charger Infrastructure – DCFC	1,117
3	Site Acquisition Support and Market Education and Outreach	15,543
4	Program Management Organization	1,137
5	Total	\$34,860 ^(a)

(a) Any discrepancies in total are due to rounding.

**4. Program Costs and Results of Operations [Witness(es):
Michael D. Della Penna and Niel Jones]**

For the purposes of deployment of its Phase 1 enhanced proposal, PG&E assumes that the Phase 1 approval occurs by the end of July 2016 and that deployment will take place over the 3-year period from April 1, 2017 through March 31, 2020, subject to the transition plan in Section B above.

Table 6 below provides the resulting forecast revenue requirement request for 2017-2022 for the Phase 1 enhanced proposal. In all other respects, the methodology and assumptions in Chapter 6 of PG&E's February 9, 2015, prepared testimony apply to these forecast program costs and results of operation.

TABLE 6
2017-2022 ENHANCED PROPOSAL REVENUE REQUIREMENT REQUEST
(THOUSANDS OF DOLLARS)

Line No.	2017	2018	2019	2020	2021	2022
1	6,325	19,130	33,508	35,780	31,604	28,723

5. Cost Recovery and Rate Design [Witness: Donna L. Barry and Dan Pease]

PG&E's proposed cost recovery and rate design for its Phase 1 enhanced proposal are the same as proposed in Chapter 7 of PG&E's February 9, 2015, prepared testimony.

1 **D. Responses to ALJ Ruling Questions [Witness: Jana R. Corey]**

2 **1. Question 1: Does the proposed EV Program meet the balancing test**
3 **established in D.11-07-029 and described in D.14-12-079? If so, how?**
4 **If not, why not?**

5 The Ruling requests that PG&E specifically address the following key
6 issues:¹⁰

- 7 a. The nature of the proposed utility program and its elements; for
8 example, whether the utility proposes to own or provide charging
9 infrastructure, billing services, metering, or customer information and
10 education.
- 11 b. Examination of the degree to which the market into which the utility
12 program would enter is competitive, and in what level of concentration.
- 13 c. Identification of potential unfair utility advantages, if any.
- 14 d. If the potential for the utility to unfairly compete is identified, what rules,
15 conditions or regulatory protections are needed to effectively mitigate
16 the anticompetitive impacts or unfair advantages held by the utility?

17 **PG&E Response:**

18 In its responses below, PG&E summarizes the nature and benefits of its
19 proposed EV Program (Part 1) then demonstrates that its proposals will not
20 adversely impact competition or provide unfair advantages (Parts 2-4). In so
21 doing, PG&E demonstrates that its Phase 1 EV Program meets and
22 exceeds the Commission's balancing test as established in D.11-07-029.

23 **1. The Nature of PG&E's Proposed Phase 1 EV Program Is**
24 **Comparable to the EV Program Proposed by PG&E in Its**
25 **February 9, 2015, Prepared Testimony, Differing Primarily in the**
26 **Reduced Scope and Schedule**

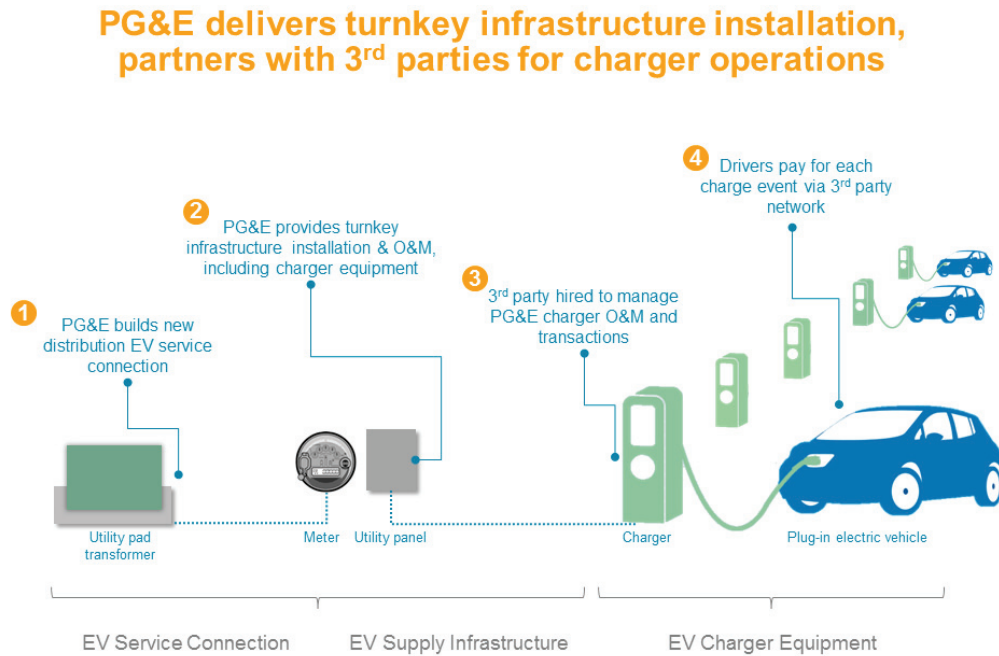
27 PG&E has designed its EV Program to offer a "turnkey" solution for
28 site hosts of EV charging stations. See Figure 3 below for a visual
29 representation. This will be a successful model for utility EV
30 infrastructure, as the turnkey model removes many of the barriers of
31 EVSE deployment to the site host. PG&E's EV Program reduces much
32 of the cost to site hosts—aside from providing parking locations. Today,

10 Ruling, p. 8.

1 cost is a primary challenge to site hosts interested in installing charging
2 stations.¹¹ PG&E will purchase and install equipment procured from the
3 competitive marketplace, and own the infrastructure, including the
4 service connection, supply infrastructure and charging equipment.
5 PG&E ultimately will be responsible for the operations and maintenance
6 of the charging equipment, through contracts with equipment and
7 service providers as partners in the program delivery and ongoing
8 operations. PG&E's EV service partners (PG&E's customer of record)
9 will buy the electricity from PG&E to resell to EV drivers at agreed upon
10 prices. In addition to avoiding upfront costs, site hosts will not incur
11 ongoing operations or maintenance costs, nor have direct obligations
12 related to permitting and other obstacles. By offering this turnkey
13 approach PG&E intends to address deterrents to installation and ensure
14 ongoing operability of the chargers. This turnkey approach will
15 encourage participation at the intended deployment locations:
16 workplaces, multi-unit dwellings, and public/retail locations throughout
17 its service territory.

¹¹ In a PEV Collaborative case study survey of 20 California businesses who had installed workplace charging, 18 listed the cost of equipment and/or installation to be the primary challenge for their workplace charging program. These businesses ranged from private small businesses to Fortune 500 companies, and even included a leading EV charging manufacturer and service provider.
www.pevcollaborative.org/sites/all/themes/pev/files/WPC_Report4web.pdf.

**FIGURE 3
PG&E'S PROPOSED DEPLOYMENT STRUCTURE**



PG&E intends to meter EV charging under the program separately from existing site-host electricity usage. This allows PG&E to treat the EV service partners as the customer of record. It also allows continued operation of the infrastructure should the site host change throughout the program. PG&E would bill the customer of record (EV service partner) for monthly energy usage at the meter. Billing drivers for individual charging sessions would be the responsibility of the EV service partners.

In addition to deploying EV infrastructure, other key elements of PG&E's proposal include education and outreach, enabling the delivery of time-variant pricing, and ensuring that the equipment purchased from the competitive market will support future grid management programs. The proposal also envisions collecting sufficient data to inform design of Phase 2, and future program designs for integrating EV load with the grid.

Further, PG&E will install approximately 10 percent of the proposed EV charging infrastructure in disadvantaged communities and will also

1 support innovative programs in these communities to help reduce
2 barriers to entry into the EV market.

3 **a. PG&E's Phase 1 EV Program Includes Elements Recommended**
4 **by the Settling Parties in the SCE and SDG&E Settlements**

5 In addition to the initial proposed elements of PG&E's EV
6 Program, PG&E's Phase 1 EV Program adopts specific elements
7 recommended by the settling parties in the SCE and SDG&E
8 settlements. PG&E supports certain elements of these settlement
9 proposals, while preserving essential elements of PG&E's original
10 proposal that maintain the turnkey benefits of its original proposal.

11 Consistent with the SCE and SDG&E settlements, PG&E
12 proposes to establish an Advisory Committee to advise on planning
13 and implementing its EV Infrastructure and Education Program.
14 This committee will include representatives of industry, labor,
15 consumer and environmental advocates, and representatives of
16 disadvantaged communities. The committee will provide critical
17 input as PG&E evaluates results from Phase 1 to inform the
18 Phase 2 program.

19 PG&E also proposes quarterly reporting of identified metrics to
20 the Commission, the Advisory Committee, and interested parties
21 throughout the deployment process. PG&E discusses its proposed
22 reporting and evaluation protocols in its response to Question 3.
23 The detailed proposed metrics are included in Appendix A.

24 PG&E's proposed turnkey Phase 1 EV program—with the
25 added elements of the Advisory Committee and quarterly
26 reporting—will be an attractive offering to site hosts, will address key
27 markets where EV infrastructure has been slow to develop, and will
28 allow the state to examine a unique EV infrastructure approach that
29 will inform Phase 2 deployments in PG&E's service territory and
30 throughout the state.

31 Given the interest by many parties in providing access to
32 multiple vendors on a competitive basis, PG&E will procure all
33 EVSE equipment and vendor services through competitive, open
34 procurements—with appropriate vendor certification and cost

controls—in order to ensure multiple vendors have an opportunity to bid to provide equipment and services for PG&E’s EV program during Phase 1. PG&E will continue to reach out to stakeholders, including consumer groups, environmental and labor groups, and the EV industry to further improve its EV Program proposal, while maintaining the core elements that make PG&E’s proposal unique and beneficial to site hosts and drivers.

b. PG&E’s Phase 1 EV Program Will Provide Widespread Benefits to Ratepayers, EV Drivers, Site Hosts, Market Participants and All Californians

The proposed program structure ensures that charging stations installed will be maintained to utility standards and continue to operate independent of site host turnover. PG&E’s proposed plan will also result in robust and transparent data collection, important to the EV market and supporting vehicle grid integration. In addition, the program will support state climate goals, reduce GHG emissions and encourage EV adoption. These three program objectives, discussed in more detail below, ensure PG&E’s proposed program will provide broad benefits to ratepayers, site hosts and all Californians.

First, providing safe and reliable power is a core function of utility operation and requires that utilities maintain and operate infrastructure to the highest standards. PG&E is obligated to ensure that all EV charging infrastructure deployed as part of this program continues to be operated and maintained reliably. This increase in dependable charging infrastructure will provide a significant benefit to all ratepayers compared to non-utility EVSE ownership. As part of the program, PG&E will negotiate an easement from site hosts where EV infrastructure will be installed. This easement will allow PG&E to own and operate EV infrastructure regardless of any change in property ownership, management, or tenancy. The charging stations will continue to be owned by PG&E and will continue to operate via EV service partners, throughout the life of the assets.

1 Second, PG&E's Phase 1 program will include robust data
2 collection and transparent reporting which will provide significant
3 benefits to the market and policymakers. PG&E will provide the
4 Commission, the Advisory Committee and stakeholders with
5 quarterly reports that include the proposed metrics and data
6 described in response to Question 3 and in Appendix A. These
7 metrics and data are essential not only to inform the Phase 2
8 deployment, but also to expand the EVSE market and further
9 vehicle grid integration generally. PG&E is committed to transparent
10 program operations so that all stakeholders can learn and improve
11 from PG&E's Phase 1 program.

12 Finally, PG&E's Phase 1 includes broad ratepayer benefits
13 related to state climate goals, reduction in GHG emissions and
14 increased EV adoption, as discussed in its original testimony served
15 on February 9, 2015. A summary of these points are outlined below
16 along with the corresponding page number in the prepared
17 testimony.

- 18 • Support State climate goals by encouraging adoption of
19 electrified transportation (February 9 Prepared Testimony,
20 p. 1-2).
- 21 • Help support intermittent renewables by supporting workplace
22 charging and energy usage during periods of potential over
23 generation (February 9 Prepared Testimony, p. 1-5).
- 24 • PG&E will implement CPUC-approved time variant pricing and
25 improve renewable grid integration (February 9 Prepared
26 Testimony, p. 1-5).
- 27 • Expand education of electric vehicles by providing customers,
28 communities, and site hosts information on the benefits of
29 electric transportation and installing charging infrastructure
30 (February 9 Prepared Testimony, p. 1-8).
- 31 • Reduce range anxiety for existing EV customers by providing
32 increased availability of EV charging infrastructure. This will
33 reassure customers that they have sufficient widely available

1 and reliable infrastructure (February 9 Prepared Testimony,
2 p. 1-9).

- 3 • Reduce GHG emissions by displacing gasoline vehicles and
4 improving California's air quality (February 9 Prepared
5 Testimony, p. 1-11)

6 **2. PG&E's Phase 1 EV Program Enhances Competitive EV Markets**

7 Today, the market for EV charging services is highly diverse, with a
8 number of different business models offered to site hosts. Some
9 companies currently operating in the market sell only EVSE to site
10 hosts, while other companies sell networking services, and others
11 integrate and sell the EVSE hardware and software. Others offer
12 charging hardware and network services for free to site hosts,
13 recovering the costs through other revenue streams, such as advertising
14 or sponsorships. Still others maintain ownership of charging stations
15 and earn revenue from drivers accessing the stations, contracting with
16 the site host to use their parking facilities. According to PlugShare
17 Data®, there were at least 15 different entities operating charging
18 stations and/or offering these services to drivers and site hosts in
19 California in 2014.¹² PG&E's purchase and deployment of this
20 equipment simply represents another model, and one which will
21 effectively scale and deploy incremental EV infrastructure to help
22 achieve state goals while at the same time enhancing the diversity of
23 EVSE suppliers in EV markets. In addition to the limited but effective
24 scale at which the utility is capable of entering the market, the benefits
25 of PG&E's deployment model are further outlined below.

26 At its essence, PG&E will be *purchasing* EV charging products and
27 services through open and competitive procurements from current
28 third-party market providers, and offering them to site hosts in the
29 utility's service territory. PG&E will not directly compete with the EVSE
30 market participants, as PG&E will be procuring from market participants.

¹² This count includes networks for Level 2 charging. One of the referenced 15 firms is a grouping of all "non-networked" chargers.

1 Though PG&E will competitively procure and not compete with EV
2 hardware and charging services from third parties, the utility has
3 examined the effect on market concentration that the enhanced Phase 1
4 program proposal (7,530 charging stations deployed by 2020) would
5 have on the current market that provides charging services to site hosts
6 in California. In evaluating the impact of PG&E's Phase 1 and overall
7 EV programs on competition, it is essential to first define the relevant
8 product and geographic markets in which PG&E would be competing if it
9 were supplying EVSE or retail charging services directly.

10 Product Market: PG&E will not be manufacturing or directly
11 operating either EV charging stations or the networking facilities and
12 software to support them. As a result, PG&E will not be competing in
13 the relevant product markets for EV supply equipment manufacturers or
14 service providers. Instead, PG&E will be competitively procuring EVSE
15 and services from third-parties who are competing with each other in the
16 EVSE/EVSP market and partnering with them to ensure the success of
17 the EV Infrastructure Program. Under PG&E's EV Program, it will own
18 the EV equipment but will not sell the charging services at retail, but
19 instead will sell the electricity under regulated utility rates and tariffs to
20 the retail charging service providers who in turn will resell to EV drivers.
21 Thus, PG&E will not be competing in the retail EV charging services
22 market, but will be enabling others to enter and compete in that market.

23 Geographic Market: Most EVSE suppliers and network providers
24 are selling their services throughout the United States and in some
25 cases globally. Thus, for competitive analysis purposes, the relevant
26 geographic market is at least national and probably global. At the
27 national level, PG&E's entry, even under its original proposal, would be
28 negligible. According to various market analyses, the annual growth in
29 the national market for commercial EVSE is expected to increase from
30 72,238 units a year in 2015 to 306,958 a year in 2021. Commercial EV
31 charging stations operating in the U.S. in 2021 are expected to total over
32 1.4 million.¹³ Even if it were assumed that PG&E's ownership of

¹³ A.14-04-014 San Diego Gas & Electric Exhibit 17: Forecast U.S. Commercial EVSE Sales (2014-2023).

1 commercial EV charging stations somehow competed directly with
2 EVSE suppliers and service providers, PG&E's original proposal of
3 25,100 charging stations would amount to less than 1.8 percent of the
4 national EV commercial charging station market in 2021. Its compliant
5 and enhanced proposals would be only one-tenth to one-third of its
6 original proposal.

7 Even when considering the market in which PG&E is confined to
8 operate in, i.e., the utility's service territory, PG&E's entry actually lowers
9 the market concentration in the EV charging services market compared
10 to observed values today. Under U.S. Department of Justice guidelines
11 for market concentration, both PG&E's compliant and enhanced
12 Phase 1 deployment proposals would represent an improvement in the
13 Herfindahl–Hirschman Index (HHI)¹⁴ for market concentration. Using
14 current market share values for commercial EVSE as reported by
15 PlugShare Data®, and growing the commercial EVSE market at the rate
16 which is needed to achieve the Governor's goal for infrastructure
17 deployment, PG&E's entry would lower the market concentration over
18 the span of the enhanced program. The total deployment in PG&E's
19 enhanced proposal would equate to just 7.5 percent of the market need
20 by 2020, lowering the HHI from over 3,600 today, to 3,149 in 2020. See
21 Table 7 below, which displays the HHI modeled with PG&E's Enhanced
22 Proposal, calculated in accordance with U.S. Department of Justice
23 methods for HHI. The effect of PG&E's Compliant Proposal on lowering
24 market concentration is less pronounced under a smaller Phase 1,

¹⁴ The Herfindahl–Hirschman Index is a commonly accepted measure of market concentration. This takes into account the relative size distribution of the firms in a market. It approaches zero when a market is occupied by a large number of firms of relatively equal size and reaches its maximum of 10,000 points when a market is controlled by a single firm. The agencies generally consider markets in which the HHI is between 1,500 and 2,500 points to be moderately concentrated, and consider markets in which the HHI is in excess of 2,500 points to be highly concentrated. See U.S. Department of Justice and Federal Trade Commission, Horizontal Merger Guidelines § 5.2 (2010). Transactions that increase the HHI by more than 200 points in highly concentrated markets are presumed likely to enhance market power under the Horizontal Merger Guidelines issued by the Department of Justice and the Federal Trade Commission. See <http://www.justice.gov/atr/herfindahl-hirschman-index>.

1 because PG&E's involvement in the market is significantly less, but
2 would still not adversely affect current market conditions.

TABLE 7
COMMERCIAL EVSP MARKET CONCENTRATION

Line No.	HHI ^(a)	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	Non-PG&E EVSE	1,175	1,951	2,472	3,075	6,170	11,728	22,104	43,554	92,470
2	PG&E EVSE (Enhanced Proposal)	—	—	—	—	—	652	2,735	6,285	7,530
3	Total	1,175	1,951	2,472	3,075	6,170	12,380	24,839	49,839	100,000
4	PG&E "Market Share"	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	11.0%	12.6%	7.5%
5	HHI	5,153	4,251	3,888	3,617	3,617	3,273	2,985	2,921	3,149

(a) For illustrative purposes, PG&E's calculation of the HHI market concentration for its ownership of EV charging stations used EVSE charging service providers within its service territory. PG&E used existing data on existing commercial EVSP suppliers from PlugShare Data® to calculate the existing market concentration in California of non-residential EV charging stations. PG&E added its proposed Phase 1 EV charging stations to the total from 2017 through 2020. The commercial EVSE market outside of PG&E's deployments is assumed to grow annually at 101 percent, the rate needed, in addition to PG&E's proposed deployments, to support PG&E's share of 1 million zero emission vehicles. Under the modeled scenario, PG&E's 2020 deployment would conclude with the end of Phase 1, and does not include proposed "bridge" deployments. Non PG&E infrastructure growth is modeled through the end of 2020 to meet the Governor's goal of deploying the infrastructure needed to support 1 million zero emission vehicles at a 1:4 charge to vehicle attach rate.

3 Further, by entering into "turnkey" equipment procurement contracts
4 and long-term operating agreements with EV equipment and network
5 suppliers, PG&E will be infusing capital and financing directly to the
6 third-party EV suppliers who will then be able to leverage their financing
7 and services to expand into EV markets both within and outside of
8 California that were not previously available to them.

9 Finally and most obviously, PG&E's ability to integrate the financing
10 and installation of utility EV infrastructure directly with the siting,
11 installation and operation of the EV chargers will enhance the ability of
12 third-party EV charging equipment and network suppliers to seamlessly
13 expand their entry into charging markets without bearing the costs and
14 uncertainty relating to utility distribution infrastructure.

15 The phased, smaller size of PG&E's Phase 1 EV Program and its
16 participation as a competitive procurer, rather than direct supplier, of
17 EVSE and retail EV charging services demonstrate that PG&E's
18 Phase 1 Program and its overall EV program will avoid adverse

1 competitive impacts and in fact enhance competition and reduce
2 concentration in relevant EV infrastructure markets.

3 **3. & 4. PG&E's Phase 1 EV Program Will Not Provide Unfair**
4 **Advantages to PG&E**

5 PG&E is obligated to provide non-discriminatory, non-preferential
6 services to all utility customers, and the Commission is empowered to
7 address any complaint by any customer that PG&E is unduly
8 discriminating against them or their suppliers in providing utility services.
9 In compliance with its utility obligations, PG&E will not provide
10 preferential or discriminatory treatment to customers or their EVSE
11 suppliers or site hosts based on whether they are or are not participating
12 in PG&E's EV programs. In addition, PG&E's use of open and
13 competitive procurement of EVSE equipment and services ensures that
14 the utility will not accrue any unfair advantages over non-utility suppliers
15 and service providers.

16 PG&E's EV Program will use open competitive procurement
17 processes and will be implemented on a non-discriminatory basis
18 through the same process and standards as all new service connection
19 applications. PG&E data collection and reporting will also allow all EV
20 charger developers and owners to benefit from efficiencies in the EV
21 infrastructure deployment process and increased EV utilization.

22 Conclusion to Question 1: In conclusion, PG&E's responses to
23 Parts 1 through 4 of Question 1 of the Ruling demonstrate that PG&E's
24 Phase 1 EV Program is designed to provide significant benefits to
25 ratepayers, EV drivers, and the broader market related to EVs at
26 reasonable cost and without adverse impacts on competition. PG&E's
27 program will not receive unfair advantages due to its utility status.
28 PG&E's competitive procurement and deployment of chargers will in fact
29 enhance competition and reduce concentration in the market. Thus,
30 PG&E's Phase 1 EV Program meets and exceeds the Commission's
31 balancing test for utility deployment of EV infrastructure.

2. **Question 2: What benefits, if any, does PG&E’s installation of DCFC offer that are not already being offered by other market participants throughout their service territory? Do those benefits merit the incremental cost of DCFC within the program? What is the current state of competition and concentration in the DCFC market?**

PG&E Response:

DCFCs are a unique component of PG&E’s proposed EV infrastructure program and can provide significant benefits to EV drivers throughout the service territory that are not currently being provided by other providers. DCFCs can charge an electric vehicle to an 80 percent state of charge in approximately 20 minutes. PG&E’s DCFCs will be co-located with a Level 2 station, allowing these stations to serve all EV drivers, but particularly Battery Electric Vehicle (BEV) drivers and those without residential charging capability (e.g., in multi-unit dwellings (MUDs)). Unfortunately, DCFCs are relatively expensive to install, and few have been installed anywhere in California outside of several large metropolitan areas (see Figure 4). Because of the significant benefits of faster charging, EV manufacturers are now equipping more EVs with fast charging capability. PG&E proposes to competitively procure and deploy an initial number of DCFCs in its Phase 1 Program at reasonable cost in order to meet this gap in current EVSE markets.

Benefits to BEV Drivers: BEV drivers now comprise a majority of EV drivers across PG&E’s service territory. These drivers, unlike Plug-In Hybrid Electric Vehicle drivers who rely on gasoline backup to extend their range, need a regional fast charging network separate from home charging in order to overcome BEV range anxiety. To date, 62 percent of EV drivers throughout PG&E’s service territory have purchased or leased BEVs.¹⁵ Sales data for 2015 suggest that the market is moving more heavily towards BEVs. In the first seven months of 2015 alone, BEVs have surpassed 70 percent of all EV sales in PG&E’s territory.¹⁶ Furthermore, automotive

¹⁵ EPRI R.L. Polk Automotive Data, July 2015.

¹⁶ *Ibid.*

1 manufacturers continue to announce new fast-charge capable models.¹⁷
2 Importantly, DCFCs may significantly reduce the range anxiety of BEV
3 drivers toward longer inter-regional trips that would otherwise require a
4 several-hour stop at a location with an L2 charging station.¹⁸

5 Benefits to MUD Residents: In addition, DCFCs can serve a unique
6 piece of the MUD market that L2 chargers may not. DCFCs allow faster
7 chargers for more drivers in the same space, compared to multiple parking
8 spaces needed for L2 chargers to support multiple drivers with much longer
9 charging times. DCFCs thus are ideal for MUDs that have limited parking
10 for MUD residents. The more rapid charging capability of DCFCs provides
11 an opportunity to significantly increase the availability and utilization of
12 stations deployed in or near MUDs. Additionally, DCFCs placed in public
13 locations within close proximity to residential areas have the potential to
14 support customers who may not have access to residential charging, which
15 is critical to increasing vehicle adoption and overcoming range anxiety in
16 these areas.

17 Existing Market Participants Need Additional Support for DCFC
18 Deployment: Although providing significant benefits to BEV drivers and
19 MUD residents, DCFCs are relatively more expensive to install than L2
20 chargers. As a result, DCFC deployment has been severely limited in
21 California, as depicted in Figure 4 and Table 8, which show the diversity of
22 network providers and station deployment in PG&E's territory.

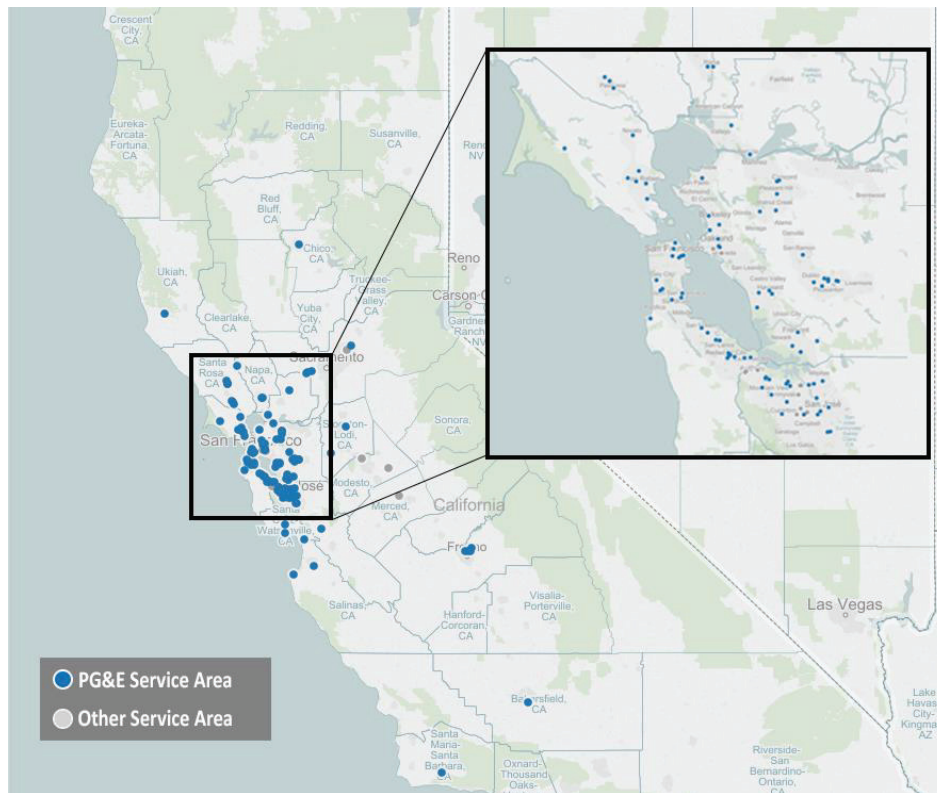
23 For example, installations of DCFC in high end retail establishments
24 located in metro areas and have been limited along regional corridors.
25 While these retail located stations are important to current and potential
26 drivers, they do not serve regional or metropolitan area driving patterns in
27 the majority of PG&E's territory. Figure 4 below is from PlugShare Data®,
28 demonstrating the concentration of DCFCs in the Bay Area and scarcity in
29 the rest of the state.¹⁹

17 PEV Market and Program 18 Update, EPRI 2015.

18 Guidelines for Infrastructure Planning: An Explanation of the EPRI Red Line/Blue Line Model. EPRI, Palo Alto, CA: 2014. 3002004096.

19 Data shown in image is proprietary PlugShare Data® and only shows DCFCs with either an SAE Combo Connector or CHAdeMO plug.

FIGURE 4
CURRENT DEPLOYMENT OF DCFCs FROM PLUGSHARE DATA®



As another example of the limits of existing DCFC charging services, Tesla’s proprietary network of SuperCharger stations has garnered enthusiasm and support from its customers and external stakeholders—but it is proprietary and limited to Tesla drivers. There have been other auto manufacturer-sponsored DCFC installations (e.g., Nissan and VW/BMW), however, these DCFCs only support the auto manufacturer’s preferred charging plug standard. PG&E will install both of the predominant plug-types (CHAdemo and SAE Combo Connector) at its DCFC locations, and will be co-located with a Level 2 charger so that all EVs can use these locations.

The Costs of PG&Es’ Proposed DCFCs Are Reasonable. Under PG&E’s proposed deployment of DCFCs, the costs will be based on competitive procurement of turnkey DCFC equipment using both the CHAdemo and SAE Combo Connector DCFC charging standard, ensuring BEV drivers have universal access to these stations. PG&E will co-locate at least one Level 2 charger at each of these DCFC locations, thus ensuring all

vehicle types will be able to use these locations, providing further benefits to drivers compared to existing proprietary DCFCs.

TABLE 8
NETWORK COVERAGE AND CONNECTOR TYPE IN PG&E'S SERVICE TERRITORY^(a)

Line No.	Network	Locations	Stations	CHAdEMO Connectors	SAE Combo Connectors	Tesla SuperChargers
1	Firm 1	2	2	2	—	—
2	Firm 2	15	16	15	3	—
3	Firm 3	25	27	28	—	—
4	Firm 4	14	120	—	—	120
5	Firm 5	6	6	6	6	—
6	Firm 6	56	98	97	50	—
7	Grand Total	117	269	148	59	120

(a) PlugShare Data®.

PG&E's DCFC siting and deployment will be informed by industry-leading research. PG&E has a project underway as part of the Electric Program Investment Charge program to determine a list of 200-500 DCFC locations in PG&E's territory. PG&E is currently working with UC Davis, E3, Ricardo, PlugShare Data® and PG&E's distribution experts to identify locations that are lower cost, and optimally placed. This report will be publicly available in Q2 2016 and used to support PG&E's DCFC Phase 1 deployment.

The overall cost of PG&E's initial DCFC deployment, including capital costs and expense amounts, will be \$12.5 million for PG&E's compliant Phase 1 proposal and \$25.2 million for PG&E's enhanced Phase 1 proposal, compared to the overall Phase 1 program costs. The benefits to EV drivers in terms of EV adoption and reduction in EV range anxiety will significantly exceed these costs. PG&E's competitive procurement of DCFCs also will provide further support to existing and potentially new DCFC suppliers and operators, compared to the extremely limited deployment of DCFCs in California to date.

1 **3. Question 3: What information and data should PG&E collect during**
2 **the initial phase of its program? What analysis should be conducted**
3 **to determine the merit of a second phase, and who should conduct**
4 **that analysis?**

5 **PG&E Response:**

6 The EV charging infrastructure market is relatively immature and reflects
7 a unique crossover between the transportation and electricity sectors. Data
8 and metrics for infrastructure deployment are not yet well established, so
9 PG&E proposes a data collection plan that is responsive to the
10 Commission's evaluation needs while remaining flexible enough to capture
11 new learnings that will result from the Phase 1 EV Program.

12 During its Phase 1 EV Program, PG&E seeks to collect a wide range of
13 data on both utility and non-utility program performance and to share this
14 data with the Commission and Advisory Committee on a quarterly basis.
15 PG&E envisions the data to include elements related to (a) deployment;
16 (b) operations of PG&E's EV infrastructure; and (c) broad EV and charger
17 market data. In consultation with the Advisory Committee, PG&E will
18 analyze the collected data to identify changes that can be made to better
19 achieve program goals in subsequent phases in light of market
20 developments.

21 PG&E's data and evaluation plan is consistent with the proposals
22 outlined in the SCE and SDG&E settlements and will provide PG&E, the
23 Advisory Committee and the Commission with the ability to determine what,
24 if any, changes to make in the subsequent phase of PG&E's EV
25 Infrastructure Program. The process for analyzing and including the
26 Phase 1 EV Infrastructure Program data and reports in the Commission
27 proceeding on the subsequent phase of the EV Program are discussed in
28 the Transition Plan to Phase 2. PG&E's proposed Data Collection and
29 Reporting protocols are attached to this testimony as Appendix A.

30 Data Collection to Evaluate Vehicle Grid Integration and Demand
31 Response Capabilities. PG&E is well aware that one of the potential
32 benefits to EVs at scale includes the potential for vehicle-grid integration.
33 PG&E's Phase 1 infrastructure program will include the procurement of EV
34 charger equipment and infrastructure that can be used to support load

1 management programs to deliver grid benefits over the long-term. In
2 advance of Phase 1 deployment, PG&E plans to gather data about the
3 range of functionality and load management capability available in the
4 charger hardware and network operations software markets through a
5 Request for Information (RFI). This RFI will enable PG&E to develop
6 specifications for use in a competitive solicitation once the EV Program is
7 approved. PG&E plans to procure technology that is capable of responding
8 to a variety of load management signals and flexible enough to enable a
9 variety of grid integration opportunities.

10 Currently, PG&E is implementing two pilots funded through Demand
11 Response proceedings designed to explore a technology-agnostic way to
12 address renewable integration, and importantly, over-generation.²⁰ These
13 pilots seek information for a more comprehensive approach to allow various
14 types of customer side resources to support the grid. PG&E intends to
15 combine the learnings from these, and other pilots with the data collection
16 and analysis from the Phase 1 deployment, to inform future load
17 management program design.

18 **4. Question 4: What transition mechanisms should be established**
19 **between an initial phase and a potential second phase to allow**
20 **adequate time for regulatory review of the initial phase while also**
21 **minimizing market uncertainty and discontinuity during the review**
22 **period?**

23 **PG&E Response:**

24 PG&E has evaluated various options for a smooth transition between its
25 Phase 1 program and the subsequent phase of its EV Program, and has
26 also reviewed the elements of the SDG&E and SCE settlements.

27 Based on this review and as discussed in its Phase 1 compliant and
28 enhanced proposals above, PG&E's phased EV programs include the
29 following transition mechanism to assist the Commission in evaluating
30 PG&E's subsequent EV program while avoiding customer and EV market
31 uncertainty and discontinuity.

20 D.14-05-025.

1 Quarterly Data Collection and Reporting: First, PG&E proposes that,
2 beginning with the first installation of EV chargers under its Phase 1
3 program, PG&E will begin reporting quarterly the results and data from its
4 EV deployment and operation, using as a model the data collection and
5 reporting requirements agreed to by the settling parties in the SDG&E and
6 SCE EV settlements. Appendix A provides more detail regarding PG&E's
7 proposed data and metrics to be collected and included in the quarterly
8 reports.

9 EV Advisory Committee: Second, PG&E will create an Advisory
10 Committee similar to those proposed under the SCE and SDG&E
11 settlements, and convene meetings and workshops with the Advisory
12 Committee and with other interested parties and Commission staff to
13 discuss the results and answer questions and data requests regarding the
14 progress of Phase 1 deployment. Similar to the Advisory Committee
15 proposed by the SCE settlement, the PG&E EV Advisory Committee will
16 include representatives from a diverse array of key constituents, including
17 consumer advocates, environmentalists, EV drivers, the automotive
18 industry, disadvantaged communities, labor and EV charging providers.
19 PG&E will solicit participation to ensure the Advisory Committee reflects a
20 balance of stakeholder representation. Information will be provided to the
21 Advisory Committee to facilitate understanding of PG&E's Phase 1 EV
22 Program progress and encourage effective dialogue on potential
23 modifications to the Program.

24 Filing of Phase 2 Program Proposal: Third, PG&E will file updated
25 supplemental testimony providing its proposal for Phase 2 EV infrastructure
26 deployment at least six months before the conclusion of Phase 1. PG&E will
27 include in its testimony a detailed assessment of the Phase 1 data and
28 performance to date and how its Phase 2 proposal incorporates Phase 1
29 results. During the pendency of the Commission's consideration of PG&E's
30 Phase 2 proposal, PG&E will continue to report its Phase 1 data quarterly
31 and the data and reports will be included in the record of the Phase 2
32 proceeding. This provides the Commission with the remaining six months of
33 Phase 1 data to reach a decision on Phase 2.

1 Bridge Funding: Fourth, if the Commission reviews and issues a final
2 decision by the conclusion of the Phase 1 deployment, there will be no
3 interruption, confusion or market uncertainty or discontinuity regarding
4 PG&E's subsequent EV infrastructure deployment. However, if the
5 Commission for whatever reason has not issued a decision on PG&E's
6 Phase 2 proposal before the end of PG&E's Phase 1 deployment, PG&E will
7 be authorized to "bridge" the gap in its EV program by continuing to deploy
8 and recover the costs of EV charging infrastructure for an additional year at
9 a deployment and expenditure rate no faster and no greater than the
10 average monthly rate of deployment and costs recorded during the
11 six months preceding the end of Phase 1. PG&E's authorization for its
12 "bridge" program and funding will be filed in a Tier 2 advice filing at least
13 three months before the end of Phase 1 and will provide the detailed
14 deployment schedule and cost cap applicable to the additional year of EV
15 deployment and funding, subject to true-up for the final results from
16 Phase 1. If the Commission still has not issued a final decision on PG&E's
17 Phase 2 proposal at the end of the first additional year after Phase 1
18 ("bridge" program), PG&E will file a petition for modification of the
19 Commission's Phase 1 decision for continued funding for an additional year,
20 and the Commission will commit to act on the petition for modification within
21 three months, subject to written comment and at least one public workshop
22 prior to the decision.

23 As discussed above in its description of its Phase 1 compliant and
24 enhanced proposals, PG&E's proposed transition mechanism balances the
25 need for adequate time for Commission review of the result of Phase 1, with
26 the need for customer and EV market certainty and continuity between
27 phases of the utility EV programs.

28 **E. Conclusion**

29 PG&E, along with the CPUC and California policymakers and leaders
30 support and in fact have mandated the expansion of transportation electrification
31 to meet important state climate and environmental goals. PG&E has filed this
32 proposal in response to the CPUC's September 4 Ruling as well as in
33 compliance with the State's transportation electrification mandates and policies.
34 PG&E recommends that the Commission act expeditiously to approve PG&E's

1 Phase 1 enhanced proposal to provide for a significant initial deployment of
2 utility-driven EV infrastructure and comprehensive data to support Commission
3 and stakeholder review of PG&E's Phase 2 Proposal. As the national media
4 have reported, the need for additional public EV infrastructure is immediate.²¹
5 PG&E requests that its Phase 1 proposal be approved quickly, so that
6 deployment of needed additional EV infrastructure can begin expeditiously in
7 support of the Governor's and Legislature's EV transportation electrification
8 goals.

²¹ See, e.g., "In California, Electric Cars Outpace Plugs, and Sparks Fly," New York Times, October 10, 2015, [https://urldefense.proofpoint.com/v2/url?u=http-3A-www.nytimes.com 2015 10 11 science in-2Dcalifornia-2Delectric-2Dcars-2Doutpace-2Dplugs-2Dand-2Dsparks-2Dfly.html-3Fpartner-3Drss-26emc-3Drss-26-5Fr-3D0&d=BQIGaQ&c=hLS_V_MyRCwXDjNCFvC1XhVzdhW2dOtrP9xQj43rEYI&r=eNZPyAJy4-o5juCaiqpHww&m=goJ3nexUg-4RuNSRH6QNDcmuk_5hWjO7tle9CTZKH6w&s=BgE6dwPZS2N5MACtqvNYVsVaeZUqrLpBGZryDQj6jil&e=](https://urldefense.proofpoint.com/v2/url?u=http-3A-www.nytimes.com%202015%2010%2011%20science%20in-2Dcalifornia-2Delectric-2Dcars-2Doutpace-2Dplugs-2Dand-2Dsparks-2Dfly.html-3Fpartner-3Drss-26emc-3Drss-26-5Fr-3D0&d=BQIGaQ&c=hLS_V_MyRCwXDjNCFvC1XhVzdhW2dOtrP9xQj43rEYI&r=eNZPyAJy4-o5juCaiqpHww&m=goJ3nexUg-4RuNSRH6QNDcmuk_5hWjO7tle9CTZKH6w&s=BgE6dwPZS2N5MACtqvNYVsVaeZUqrLpBGZryDQj6jil&e=).

PACIFIC GAS AND ELECTRIC COMPANY
APPENDIX A
PROPOSED METRICS

PACIFIC GAS AND ELECTRIC COMPANY
APPENDIX A
PROPOSED METRICS

On a quarterly basis, Pacific Gas and Electric Company (PG&E) proposes to report on quantitative metrics and qualitative elements regarding the Electric Vehicle (EV) Infrastructure and Education Program in order to inform stakeholders and enable the California Public Utilities Commission to evaluate the next phase of the EV Infrastructure Program. The proposed metrics list includes components significant for evaluation of PG&E's Phase 1 deployment of charging infrastructure as well as operational components that can inform future program development to encourage EV adoption, optimize charging deployment, and implement load management. PG&E will partner with the Advisory Committee to refine the data collection and reporting plan and to ensure that the plan maintains confidentiality.

	Proposed Metrics List
Deployment Metrics	<p>Where applicable, report metrics by market segment including disadvantaged communities</p> <ul style="list-style-type: none"> • Site host enrollment (# of applications and # of sites installed) • EVSEs installed • Deployment time • Installation and charger costs (total, avg, by charger type) • Operating costs • Deployment within or adjacent to Disadvantaged Communities • Supplier diversity and workforce objective achievement
Operational Metrics	<p>Where applicable, report metrics by market segment including disadvantaged communities</p> <ul style="list-style-type: none"> • EV Driver Enrollment (total and by site) • Utilization rate by site, by type of charger • Charger Uptime (avg) • Pricing and kWh usage by price • Associated usage data: plugged in time, charging duration, charging power level • Charging load profiles (aggregate and by charger) • Load impacts • Customer satisfaction (convenience, ease of use) (by survey of site hosts and EV drivers) • EV rate adoption • EV adoption in service territory • Societal impacts <ul style="list-style-type: none"> ○ ZEV miles traveled ○ Fuel cost savings ○ Avoided GHG
Descriptive Elements	<ul style="list-style-type: none"> • Sales/outreach efforts • Key barriers to deployment of EV charging infrastructure and the program's approaches to overcome these barriers • Identification of grid benefits and other impacts • Observations on effect of the program on the EVSE and EV market

PACIFIC GAS AND ELECTRIC COMPANY
APPENDIX B
PROGRAM DETAILED COST

Compliant Proposal

**TABLE B-1
EV PROGRAM – COMPLIANT PROPOSAL
DEPLOYMENT PLAN (2016-2019)**

Line No.	Description	L2 Banks		DCFC		
		Sites	Chargers	Sites	DC Fast-Chargers	L2 Chargers
			(10/site)		(1/site)	(1/Site)
1	March-17	0	0	0	0	0
2	April-17	1	10	0	0	0
3	May-17	1	10	0	0	0
4	June-17	2	20	0	0	0
5	July-17	2	20	0	0	0
6	August-17	3	30	0	0	0
7	September-17	3	30	0	0	0
8	October-17	4	40	0	0	0
9	November-17	5	50	1	1	1
10	December-17	6	60	1	1	1
11	January-18	8	80	1	1	1
12	February-18	11	110	1	1	1
13	March-18	15	150	2	2	2
14	April-18	15	150	2	2	2
15	May-18	15	150	2	2	2
16	June-18	15	150	3	3	3
17	July-18	15	150	3	3	3
18	August-18	15	150	3	3	3
19	September-18	15	150	4	4	4
20	October-18	15	150	4	4	4
21	November-18	15	150	4	4	4
22	December-18	15	150	4	4	4
23	January-19	15	150	5	5	5
24	February-19	15	150	5	5	5
25	March-19	15	150	5	5	5
26	Phase 1 Total	241	2,410	50	50	50

TABLE B-2
EV PROGRAM – COMPLIANT PROPOSAL
FORECAST PROGRAM COSTS (2016-2019)
(NOMINAL DOLLARS)

Line No.	DESCRIPTION	Witness	2016	2017	2018	2019	TOTAL
1	L2 Infrastructure Costs						
2	L2 Site Service Connection	Jeffrey P. Borders	\$-	\$1,064,209	\$6,880,000	\$1,891,808	\$9,836,017
3	L2 Site EV Supply Infrastructure	Jeffrey P. Borders	-	1,542,162	9,969,913	2,741,448	14,253,523
4	L2 EV Charger & Network Operations	Jana R. Corey	-	1,803,278	11,041,751	3,075,918	15,920,947
5	L2 Site Service Connection Capital Replacement	Jeffrey P. Borders	-	4,727	35,443	45,004	85,174
6	L2 Site EV Supply Infrastructure Capital Replacement	Jeffrey P. Borders	-	4,727	35,443	45,004	85,174
7	L2 Capital Contingency	Jeffrey P. Borders + Jana R. Corey	-	573,505	3,562,220	994,003	5,129,728
8	<i>Capital Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	<i>4,992,608</i>	<i>31,524,769</i>	<i>8,793,187</i>	<i>45,310,564</i>
9	L2 EV Charger & Network O&M	Jana R. Corey	-	411,339	2,769,896	1,502,049	4,683,284
10	L2 Site Service Connection Maintenance	Jeffrey P. Borders	-	4,459	30,622	22,971	58,052
11	L2 Site EV Supply Infrastructure Maintenance	Jeffrey P. Borders	-	4,459	30,622	22,971	58,052
12	L2 Expense Contingency	Jeffrey P. Borders	-	84,051	566,228	309,598	959,877
13	<i>Expense Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	<i>504,308</i>	<i>3,397,368</i>	<i>1,857,588</i>	<i>5,759,264</i>
14	DCFC Infrastructure Costs						
15	DCFC Site Service Connection	Jeffrey P. Borders	-	82,308	1,402,698	658,422	2,143,428
16	DCFC Site EV Supply Infrastructure	Jeffrey P. Borders	-	153,803	2,621,119	1,230,345	4,005,268
17	DCFC EV Charger & Network Operations	Jana R. Corey	-	123,305	2,236,640	995,764	3,355,709
18	DCFC Site Service Connection Capital Replacement	Jeffrey P. Borders	-	350	6,329	9,337	16,016
19	DCFC Site EV Supply Infrastructure Capital Replacement	Jeffrey P. Borders	-	350	6,329	9,337	16,016
20	DCFC Capital Contingency	Jeffrey P. Borders + Jana R. Corey	-	90,029	1,568,279	725,801	2,384,109
21	<i>Capital Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	<i>450,146</i>	<i>7,841,395</i>	<i>3,629,006</i>	<i>11,920,547</i>
22	DCFC EV Charger & Network O&M	Jana R. Corey	-	10,576	184,769	192,366	387,711
23	DCFC Service Connection Maintenance	Jeffrey P. Borders	-	330	5,730	5,302	11,363
24	DCFC EV Supply Infrastructure Maintenance	Jeffrey P. Borders	-	330	5,730	5,302	11,363
25	DCFC Expense Contingency	Jeffrey P. Borders + Jana R. Corey	-	4,022	70,791	82,404	157,218

TABLE B-2
EV PROGRAM – COMPLIANT PROPOSAL
FORECAST PROGRAM COSTS (2016-2019)
(NOMINAL DOLLARS)
(CONTINUED)

Line No.	DESCRIPTION	Witness	2016	2017	2018	2019	TOTAL
26	Expense Subtotal	Jeffrey P. Borders + Jana R. Corey	-	15,259	267,021	285,375	567,655
27	Infrastructure Cost Subtotal (DCFC + L2)						
28	Capital Subtotal	Jeffrey P. Borders + Jana R. Corey	-	5,442,754	39,366,164	12,422,193	57,231,111
29	Expense Subtotal	Jeffrey P. Borders + Jana R. Corey	-	519,567	3,664,389	2,142,963	6,326,919
30	Site Acquisition Support and Market Education and Outreach						
31	EV Cost of Ownership Tool Set	David B. Almeida	-	1,221,488	-	-	1,221,488
32	Site Host Online Application Portal	David B. Almeida	-	1,048,534	-	-	1,048,534
33	E&O Information Technology Capital Contingency	David B. Almeida	-	1,135,011	-	-	1,135,011
34	Capital Subtotal	David B. Almeida	-	3,405,033	-	-	3,405,033
35	Energy Solutions & Services Support	David B. Almeida	-	624,997	644,686	150,560	1,420,242
36	EV Program Call Center Support	David B. Almeida	-	136,510	140,396	75,102	352,008
37	EV Program Web Content	David B. Almeida	-	232,096	-	-	232,096
38	EV Program Web Content O&M	David B. Almeida	-	-	53,995	-	53,995
39	EV Program External Outreach	David B. Almeida	-	1,292,915	1,075,086	-	2,368,001
40	Disadvantaged Communities	David B. Almeida	-	2,748,939	510,619	-	3,259,557
41	Education, Outreach & Support Expense Contingency	David B. Almeida	-	503,546	242,478	22,566	768,590
42	Information Technology						
42	EV Cost of Ownership Tool Set (Project Expense Cost)	David B. Almeida	-	298,559	-	-	298,559
43	Site Host Online Application Portal (Project Expense Cost)	David B. Almeida	-	256,051	-	-	256,051
44	E&O Information Technology Project Expense Contingency	David B. Almeida	-	277,305	-	-	277,305
45	EV Cost of Ownership Tool Set - O&M	David B. Almeida	-	98,681	152,591	38,903	290,174
46	Site Host Online Application Portal - O&M	David B. Almeida	-	55,168	112,496	28,681	196,345
47	E&O Information Technology O&M Contingency	David B. Almeida	-	76,924	132,544	33,792	243,260
48	Expense Subtotal	David B. Almeida	-	6,601,690	3,064,890	349,603	10,016,183
49	Program Management Organization						
50	Program Management Organization Labor	Jana R. Corey	561,439	2,498,338	2,637,744	1,256,804	6,954,326

TABLE B-2
EV PROGRAM – COMPLIANT PROPOSAL
FORECAST PROGRAM COSTS (2016-2019)
(NOMINAL DOLLARS)
(CONTINUED)

Line No.	DESCRIPTION	Witness	2016	2017	2018	2019	TOTAL
51	L2 Site Easements (fees and services)	Jana R. Corey	-	35,023	226,421	62,260	323,704
52	L2 Site Easements (fees and services) Contingency	Jana R. Corey	-	7,005	45,284	12,452	64,741
53	DCFC Site Easements (fees and services)	Jana R. Corey	-	2,594	44,212	20,753	67,560
54	DCFC Site Easements (fees and services) Contingency	Jana R. Corey	-	649	11,053	5,188	16,890
55	Billing and Reporting Integration	Jana R. Corey	-	1,396,604	-	-	1,396,604
56	Billing and Reporting Integration Contingency	Jana R. Corey	-	698,302	-	-	698,302
57	<i>Capital Subtotal</i>	<i>Jana R. Corey</i>	561,439	4,638,515	2,964,716	1,357,457	9,522,127
58	Billing and Reporting Integration (Project Expense Cost)	Jana R. Corey	-	340,670	-	-	340,670
59	Billing and Reporting Integration (Project Expense Cost) Contingency	Jana R. Corey	-	170,335	-	-	170,335
60	Billing and Reporting Integration - O&M	Jana R. Corey	-	73,937	150,768	38,438	263,143
61	Billing and Reporting Integration O&M Contingency	Jana R. Corey	-	36,969	75,384	19,219	131,572
62	<i>Expense Subtotal</i>	<i>Jana R. Corey</i>	-	621,911	226,152	57,657	905,720
63							
64	CAPITAL TOTAL	Michael D. Della Penna	561,439	13,486,301	42,330,880	13,779,650	70,158,271
65	EXPENSE TOTAL	Michael D. Della Penna	-	7,743,168	6,955,431	2,550,223	17,248,822
66	PROGRAM TOTAL	Michael D. Della Penna	\$561,439	\$21,229,470	\$49,286,311	\$16,329,873	\$87,407,093

Enhanced Proposal

**TABLE B-3
EV PROGRAM – ENHANCED PROPOSAL
DEPLOYMENT PLAN (2016-2019)**

Line No.	Description	L2 Banks		DCFC		
		Sites	Chargers (10/site)	Sites	DC Fast-Chargers (1/site)	L2 Chargers (1/Site)
1	March-17	0	0	0	0	0
2	April-17	5	50	0	0	0
3	May-17	5	50	0	0	0
4	June-17	5	50	0	0	0
5	July-17	5	50	0	0	0
6	August-17	5	50	0	0	0
7	September-17	10	100	0	0	0
8	October-17	10	100	0	0	0
9	November-17	10	100	1	1	1
10	December-17	10	100	1	1	1
11	January-18	10	100	1	1	1
12	February-18	10	100	1	1	1
13	March-18	15	150	2	2	2
14	April-18	15	150	2	2	2
15	May-18	15	150	2	2	2
16	June-18	15	150	3	3	3
17	July-18	20	200	3	3	3
18	August-18	20	200	3	3	3
19	September-18	20	200	4	4	4
20	October-18	20	200	4	4	4
21	November-18	20	200	4	4	4
22	December-18	25	250	4	4	4
23	January-19	25	250	4	4	4
24	February-19	25	250	4	4	4
25	March-19	25	250	4	4	4
26	April-19	25	250	4	4	4
27	May-19	30	300	4	4	4
28	June-19	30	300	4	4	4
29	July-19	30	300	4	4	4
30	August-19	30	300	4	4	4
31	September-19	30	300	4	4	4
32	October-19	30	300	4	4	4
33	November-19	35	350	5	5	5

**TABLE B-3
EV PROGRAM – ENHANCED PROPOSAL
DEPLOYMENT PLAN (2016-2019)
(CONTINUED)**

Line No.	Description	L2 Banks		DCFC		
		Sites	Chargers	Sites	DC Fast-Chargers	L2 Chargers
			(10/site)		(1/site)	(1/ Site)
34	December-19	35	350	5	5	5
35	January-20	35	350	5	5	5
36	February-20	39	390	5	5	5
37	March-20	39	390	5	5	5
38	Phase 1 Totals	733	7,330	100	100	100

TABLE B-4
EV PROGRAM – ENHANCED PROPOSAL
FORECAST PROGRAM COSTS (2016-2019)
(NOMINAL DOLLARS)

Line No.	DESCRIPTION	Witness	2016	2017	2018	2019	2020	2021	2022	TOTAL
1	L2 Infrastructure Costs									
2	L2 Site Service Connection	Jeffrey P. Borders	\$-	\$2,561,984	\$8,345,562	\$14,714,064	\$4,901,787	\$-	\$-	\$30,523,397
3	L2 Site EV Supply Infrastructure	Jeffrey P. Borders	-	3,712,611	12,093,682	21,322,377	7,103,255	-	-	44,231,924
4	L2 EV Charger & Network Operations	Jana R. Corey	-	4,163,343	13,350,294	23,497,344	7,820,272	-	-	48,831,253
5	L2 Site Service Connection Capital Replacement	Jeffrey P. Borders	-	11,380	48,824	115,778	21,773	22,452	23,142	243,351
6	L2 Site EV Supply Infrastructure Capital Replacement	Jeffrey P. Borders	-	11,380	48,824	115,778	21,773	22,452	23,142	243,351
7	L2 Capital Contingency	Jeffrey P. Borders + Jana R. Corey	-	1,348,296	4,322,943	7,633,265	2,536,124	8,981	9,257	15,858,865
8	<i>Capital Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	<i>11,808,995</i>	<i>38,210,129</i>	<i>67,398,607</i>	<i>22,404,985</i>	<i>53,884</i>	<i>55,542</i>	<i>139,932,141</i>
9	L2 EV Charger & Network O&M	Jana R. Corey	-	986,005	3,470,622	6,657,031	1,841,180	457,570	466,337	13,878,744
10	L2 Site Service Connection Maintenance	Jeffrey P. Borders	-	10,734	39,600	81,291	19,842	9,105	9,280	169,851
11	L2 Site EV Supply Infrastructure Maintenance	Jeffrey P. Borders	-	10,734	39,600	81,291	19,842	9,105	9,280	169,851
12	L2 Expense Contingency	Jeffrey P. Borders	-	201,494	709,964	1,363,923	376,173	95,156	96,979	2,843,689
13	<i>Expense Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	<i>1,208,967</i>	<i>4,259,786</i>	<i>8,183,535</i>	<i>2,257,036</i>	<i>570,936</i>	<i>581,876</i>	<i>17,062,136</i>
14	DCFC Infrastructure Costs									
15	DCFC Site Service Connection	Jeffrey P. Borders	-	82,308	1,402,698	2,194,741	679,385	-	-	4,359,132
16	DCFC Site EV Supply Infrastructure	Jeffrey P. Borders	-	153,803	2,621,119	4,101,151	1,269,517	-	-	8,145,590
17	DCFC EV Charger & Network Operations	Jana R. Corey	-	123,305	2,235,836	3,319,212	1,027,466	-	-	6,705,820
18	DCFC Site Service Connection Capital Replacement	Jeffrey P. Borders	-	350	6,329	15,873	2,890	2,980	3,072	31,495
19	DCFC Site EV Supply Infrastructure Capital Replacement	Jeffrey P. Borders	-	350	6,329	15,873	2,890	2,980	3,072	31,495
20	DCFC Capital Contingency	Jeffrey P. Borders + Jana R. Corey	-	90,029	1,568,078	2,411,712	745,537	1,490	1,536	4,818,383
21	<i>Capital Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	<i>450,146</i>	<i>7,840,390</i>	<i>12,058,562</i>	<i>3,727,686</i>	<i>7,451</i>	<i>7,680</i>	<i>24,091,914</i>
22	DCFC EV Charger & Network O&M	Jana R. Corey	-	10,576	184,769	385,571	84,343	48,745	49,679	763,685
23	DCFC Service Connection Maintenance	Jeffrey P. Borders	-	330	5,730	11,336	2,634	1,209	1,232	22,471
24	DCFC EV Supply Infrastructure Maintenance	Jeffrey P. Borders	-	330	5,730	11,336	2,634	1,209	1,232	22,471
25	DCFC Expense Contingency	Jeffrey P. Borders + Jana R. Corey	-	4,022	70,791	155,886	32,078	22,651	23,085	308,513
26	<i>Expense Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	<i>15,259</i>	<i>267,021</i>	<i>564,129</i>	<i>121,689</i>	<i>73,814</i>	<i>75,228</i>	<i>1,117,140</i>

TABLE B-4
EV PROGRAM – ENHANCED PROPOSAL
FORECAST PROGRAM COSTS (2016-2019)
(NOMINAL DOLLARS)
(CONTINUED)

Line No.	DESCRIPTION	Witness	2016	2017	2018	2019	2020	2021	2022	TOTAL
27	Infrastructure Cost Subtotal (DFC + L2)									
28	<i>Capital Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	12,259,140	46,050,519	79,457,169	26,132,671	61,335	63,222	164,024,056
29	<i>Expense Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	1,224,226	4,526,807	8,747,664	2,378,725	644,750	657,105	18,179,276
30	Site Acquisition Support and Market Education and Outreach									
31	EV Cost of Ownership Tool Set	David B. Almeida	-	1,221,488	-	-	-	-	-	1,221,488
32	Site Host Online Application Portal	David B. Almeida	-	1,048,534	-	-	-	-	-	1,048,534
33	E&O Information Technology Capital Contingency	David B. Almeida	-	1,135,011	-	-	-	-	-	1,135,011
34	<i>Capital Subtotal</i>	<i>David B. Almeida</i>	-	3,405,033	-	-	-	-	-	3,405,033
35	Energy Solutions & Services Support	David B. Almeida	-	894,226	1,569,883	1,003,731	654,341	-	-	4,122,181
36	EV Program Call Center Support	David B. Almeida	-	172,666	264,646	189,679	87,875	-	-	714,866
37	EV Program Web Content	David B. Almeida	-	232,096	-	-	-	-	-	232,096
38	EV Program Web Content O&M	David B. Almeida	-	-	53,995	55,064	-	-	-	109,059
39	EV Program External Outreach	David B. Almeida	-	1,292,915	1,075,086	1,013,765	-	-	-	3,381,766
40	Disadvantaged Communities	David B. Almeida	-	2,748,939	510,619	520,724	-	-	-	3,780,281
41	Education, Outreach & Support Expense Contingency	David B. Almeida	-	534,084	347,423	278,296	74,222	-	-	1,234,025
42	<i>Information Technology</i>									
42	EV Cost of Ownership Tool Set (Project Expense Cost)	David B. Almeida	-	298,559	-	-	-	-	-	298,559
43	Site Host Online Application Portal (Project Expense Cost)	David B. Almeida	-	256,051	-	-	-	-	-	256,051
44	E&O Information Technology Project Expense Contingency	David B. Almeida	-	277,305	-	-	-	-	-	277,305
45	EV Cost of Ownership Tool Set - O&M	David B. Almeida	-	98,681	152,591	155,611	39,627	-	-	446,509
46	Site Host Online Application Portal - O&M	David B. Almeida	-	55,168	112,496	114,722	29,214	-	-	311,601
47	E&O Information Technology O&M Contingency	David B. Almeida	-	76,924	132,544	135,167	34,420	-	-	379,055
48	<i>Expense Subtotal</i>	<i>David B. Almeida</i>	-	6,937,615	4,219,282	3,466,759	919,698	-	-	15,543,354
49	Program Management Organization									
50	Program Management Organization Labor	Jana R. Corey	561,439	3,255,048	4,937,093	5,219,423	1,933,896	-	-	15,906,900
51	L2 Site Easements (fees and services)	Jana R. Corey	-	84,315	274,653	484,241	161,318	-	-	1,004,527

TABLE B-4
EV PROGRAM – ENHANCED PROPOSAL
FORECAST PROGRAM COSTS (2016-2019)
(NOMINAL DOLLARS)
(CONTINUED)

Line No.	DESCRIPTION	Witness	2016	2017	2018	2019	2020	2021	2022	TOTAL
52	L2 Site Easements (fees and services) Contingency	Jana R. Corey	-	16,863	54,931	96,848	32,264			200,905
53	DCFC Site Easements (fees and services)	Jana R. Corey	-	2,594	44,212	69,177	21,414	-	-	137,398
54	DCFC Site Easements (fees and services) Contingency	Jana R. Corey	-	649	11,053	17,294	5,353			34,349
55	Billing and Reporting Integration	Jana R. Corey	-	1,396,604	-	-	-	-	-	1,396,604
56	Billing and Reporting Integration Contingency	Jana R. Corey	-	698,302	-	-				698,302
57	<i>Capital Subtotal</i>	<i>Jana R. Corey</i>	<i>561,439</i>	<i>5,454,375</i>	<i>5,321,942</i>	<i>5,886,984</i>	<i>2,154,245</i>	-	-	<i>19,378,986</i>
58	Billing and Reporting Integration (Project Expense Cost)	Jana R. Corey	-	340,670	-	-	-	-	-	340,670
59	Billing and Reporting Integration (Project Expense Cost) Contingency	Jana R. Corey	-	170,335	-	-				170,335
60	Billing and Reporting Integration - O&M	Jana R. Corey	-	73,937	150,768	153,752	39,153	-	-	417,610
61	Billing and Reporting Integration O&M Contingency	Jana R. Corey	-	36,969	75,384	76,876	19,577			208,805
62	<i>Expense Subtotal</i>	<i>Jana R. Corey</i>	<i>-</i>	<i>621,911</i>	<i>226,152</i>	<i>230,628</i>	<i>58,730</i>	-	-	<i>1,137,420</i>
63										
64	CAPITAL TOTAL	Michael D. Della Penna	561,439	21,118,548	51,372,461	85,344,153	28,286,916	61,335	63,222	186,808,075
65	EXPENSE TOTAL	Michael D. Della Penna	-	8,783,751	8,972,242	12,445,050	3,357,152	644,750	657,105	34,860,051
66	PROGRAM TOTAL	Michael D. Della Penna	\$561,439	\$29,902,300	\$60,344,703	\$97,789,203	\$31,644,068	\$706,085	\$720,327	\$221,668,126

Original Application

TABLE B-5^(a)
EV PROGRAM – ORIGINAL APPLICATION
FORECAST CAPITAL COSTS (2016-2022)
(THOUSANDS OF NOMINAL DOLLARS)

Line No.	Description	Amount
1	EV Charger Infrastructure – L2	\$477,726
2	EV Charger Infrastructure – DCFC	24,240
3	Site Acquisition Support and Market Education and Outreach	4,679
4	Program Management Organization	44,507
5	Total	\$551,151

(a) Equivalent to Table 1-1, page 1-11 of February 9, 2015
Prepared Testimony with L2 and DCFC costs broken out.

TABLE B-6^(a)
EV PROGRAM – ORIGINAL APPLICATION
FORECAST EXPENSE AMOUNTS (2016-2022)
(THOUSANDS OF NOMINAL DOLLARS)

Line No.	Description	Amount
1	EV Charger Infrastructure – L2	\$61,908
2	EV Charger Infrastructure – DCFC	1,332
3	Site Acquisition Support and Market Education and Outreach	38,171
4	Program Management Organization	1,287
5	Total	\$102,698

(a) Equivalent to Table 1-2, page 1-11 of February 9, 2015
Prepared Testimony with L2 and DCFC costs broken out.

TABLE B-7
EV PROGRAM – ORIGINAL APPLICATION
DEPLOYMENT PLAN (2016-2022)

DCFC + L2 EV CHARGING STATION DEPLOYMENT PLAN							
Line No.	DESCRIPTION	2016	2017	2018	2019	2020	TOTAL
1	EV Charging Units (Per Year)	–	2,510	5,020	8,785	8,785	25,100
2	EV Charging Sites (Per Year)	–	259	518	907	907	2,590
3	% of Total EV Charger Units Installed (Per Year)	0%	10%	20%	35%	35%	100%
4	Total EV Charger Units Installed	–	2,510	7,530	16,315	25,100	25,100
5	Total EV Charging Sites Installed	–	259	777	1,684	2,590	2,590
6	% of Total Charger Units Installed	0%	10%	30%	65%	100%	100%
7	L2 EV CHARGING STATION DEPLOYMENT PLAN						
8	L2 EV Charger Units (Per Year)	–	2,500	5,000	8,750	8,750	25,000
9	L2 EV Charging Sites (Per Year)	–	249	498	872	872	2,490
10	% of Total L2 EV Charger Units Installed (Per Year)	0%	10%	20%	35%	35%	100%
11	Total L2 EV Charger Units Installed	–	2,500	7,500	16,250	25,000	25,000
12	Total L2 EV Charging Sites Installed	–	249	747	1,619	2,490	2,490
13	% of Total L2 EV Charger Units Installed	0%	10%	30%	65%	100%	100%
14	DCFC DEPLOYMENT PLAN						
15	DCFC EV Charger Units (Per Year)	0	10	20	35	35	100
16	DCFC EV Charging Sites (Per Year)	0	10	20	35	35	100
17	% of Total DCFC EV Charger Units Installed (Per Year)	0%	10%	20%	35%	35%	100%
18	Total DCFC EV Charger Units Installed	0	10	30	65	100	100
19	Total DCFC EV Charging Sites Installed	0	10	30	65	100	100
20	% of Total DCFC EV Charger Units Installed	0%	10%	30%	65%	100%	100%
21	DCFC EV Charger Units (Per Year)	0	10	20	35	35	100

TABLE B-8^(a)
EV PROGRAM – ORIGINAL APPLICATION
FORECAST PROGRAM COSTS (2016-2019)
(NOMINAL DOLLARS)

Line No.	DESCRIPTION	Witness	2016	2017	2018	2019	2020	2021	2022	TOTAL
1	L2 Infrastructure Costs									
2	L2 Site Service Connection	Jeffrey P. Borders	\$-	\$9,814,371	\$20,273,608	\$36,638,020	\$37,804,490	\$-	\$-	\$104,530,489
3	L2 Site EV Supply Infrastructure	Jeffrey P. Borders	-	14,222,156	29,378,797	53,092,718	54,783,068	-	-	151,476,740
4	L2 EV Charger & Network Operations	Jana R. Corey	-	15,636,325	32,058,744	57,935,859	59,780,404	-	-	165,411,332
5	L2 Site Service Connection Capital Replacement	Jeffrey P. Borders	-	43,595	135,081	302,238	167,925	173,157	178,484	1,000,479
6	L2 Site EV Supply Infrastructure Capital Replacement	Jeffrey P. Borders	-	43,595	135,081	302,238	167,925	173,157	178,484	1,000,479
7	L2 Capital Contingency	Jeffrey P. Borders + Jana R. Corey	-	5,099,846	10,504,533	19,006,811	19,554,370	69,263	71,394	54,306,216
8	<i>Capital Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	44,859,888	92,485,845	167,277,882	172,258,182	415,577	428,361	477,725,736
9	L2 EV Charger & Network O&M	Jana R. Corey	-	3,780,693	8,683,752	16,700,277	14,070,154	3,496,710	3,563,714	50,295,299
10	L2 Site Service Connection Maintenance	Jeffrey P. Borders	-	41,119	103,133	208,213	153,026	70,224	71,569	647,283
11	L2 Site EV Supply Infrastructure Maintenance	Jeffrey P. Borders	-	41,119	103,133	208,213	153,026	70,224	71,569	647,283
12	L2 Expense Contingency	Jeffrey P. Borders	-	772,586	1,778,003	3,423,340	2,875,241	727,431	741,370	10,317,973
13	<i>Expense Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	4,635,516	10,668,021	20,540,043	17,251,447	4,364,589	4,448,223	61,907,838
14	DCFC Infrastructure Costs									
15	DCFC Site Service Connection	Jeffrey P. Borders	-	411,540	850,120	1,536,319	1,585,231	-	-	4,383,210
16	DCFC Site EV Supply Infrastructure	Jeffrey P. Borders	-	769,014	1,588,557	2,870,806	2,962,206	-	-	8,190,583
17	DCFC EV Charger & Network Operations	Jana R. Corey	-	730,955	1,285,678	2,323,449	2,397,422	-	-	6,737,503
18	DCFC Site Service Connection Capital Replacement	Jeffrey P. Borders	-	1,751	5,425	12,138	6,744	6,954	7,168	40,180
19	DCFC Site EV Supply Infrastructure Capital Replacement	Jeffrey P. Borders	-	1,751	5,425	12,138	6,744	6,954	7,168	40,180
20	DCFC Capital Contingency	Jeffrey P. Borders + Jana R. Corey	-	478,753	933,801	1,688,712	1,739,587	3,477	3,584	4,847,914
21	<i>Capital Subtotal</i>	<i>Jeffrey P. Borders + Jana R. Corey</i>	-	2,393,763	4,669,006	8,443,561	8,697,933	17,385	17,920	24,239,569
22	DCFC EV Charger & Network O&M	Jana R. Corey	-	52,881	138,957	287,117	196,800	113,739	115,919	905,414
23	DCFC Service Connection Maintenance	Jeffrey P. Borders	-	1,651	4,142	8,362	6,146	2,820	2,874	25,995

(a) Equivalent to Tables 6-1 and 6-2, pages 6-3 and 6-4 of February 9, 2015 Prepared Testimony with L2 and DCFC costs broken out.

TABLE B-8^(a)
EV PROGRAM – ORIGINAL APPLICATION
FORECAST PROGRAM COSTS (2016-2019)
(NOMINAL DOLLARS)
(CONTINUED)

Line No.	DESCRIPTION	Witness	2016	2017	2018	2019	2020	2021	2022	TOTAL
24	DCFC EV Supply Infrastructure Maintenance	Jeffrey P. Borders	–	1,651	4,142	8,362	6,146	2,820	2,874	25,995
25	DCFC Expense Contingency	Jeffrey P. Borders + Jana R. Corey	–	20,112	55,439	117,121	74,849	52,853	53,866	374,238
26	Expense Subtotal	Jeffrey P. Borders + Jana R. Corey	–	76,296	202,679	420,962	283,940	172,233	175,533	1,331,643
27	Infrastructure Cost Subtotal (DCFC + L2)									
28	Capital Subtotal	Jeffrey P. Borders + Jana R. Corey	–	47,253,651	97,154,851	175,721,443	180,956,115	432,963	446,281	501,965,305
29	Expense Subtotal	Jeffrey P. Borders + Jana R. Corey	–	4,711,812	10,870,700	20,961,004	17,535,387	4,536,821	4,623,756	63,239,480
30	Site Acquisition Support and Market Education and Outreach									
31	EV Cost of Ownership Tool Set	David B. Almeida	1,928,371	174,035	–	–	–	–	–	2,102,406
32	Site Host Online Application Portal	David B. Almeida	1,017,140	–	–	–	–	–	–	1,017,140
33	E&O Information Technology Capital Contingency	David B. Almeida	1,472,756	87,018	–	–	–	–	–	1,559,773
34	Capital Subtotal	David B. Almeida	4,418,267	261,053	–	–	–	–	–	4,679,319
35	Energy Solutions & Services Support	David B. Almeida	706,329	1,634,607	3,444,885	3,513,058	3,578,425	–	–	12,877,304
36	EV Program Call Center Support	David B. Almeida	352,918	543,429	901,419	1,072,344	1,310,604	–	–	4,180,715
37	EV Program Web Content	David B. Almeida	227,326	–	–	–	–	–	–	227,326
38	EV Program Web Content O&M	David B. Almeida	–	52,749	53,995	55,064	56,088	–	–	217,897
39	EV Program External Outreach	David B. Almeida	2,235,577	1,929,068	1,758,667	1,782,458	1,731,491	–	–	9,437,261
40	Disadvantaged Communities Education, Outreach & Support Expense	David B. Almeida	2,692,443	498,832	510,619	499,027	508,312	–	–	4,709,232
41	Contingency	David B. Almeida	621,459	465,869	666,959	692,195	718,492	–	–	3,164,974
42	Information Technology									
42	EV Cost of Ownership Tool Set (Project Expense Cost)	David B. Almeida	475,317	42,199	–	–	–	–	–	517,516
43	Site Host Online Application Portal (Project Expense Cost)	David B. Almeida	250,789	–	–	–	–	–	–	250,789
44	E&O Information Technology Project Expense Contingency	David B. Almeida	363,053	21,100	–	–	–	–	–	384,153
45	EV Cost of Ownership Tool Set – O&M	David B. Almeida	–	217,727	243,133	247,945	252,558	–	–	961,363

(a) Equivalent to Tables 6-1 and 6-2, pages 6-3 and 6-4 of February 9, 2015 Prepared Testimony with L2 and DCFC costs broken out.

TABLE B-8^(a)
EV PROGRAM – ORIGINAL APPLICATION
FORECAST PROGRAM COSTS (2016-2019)
(NOMINAL DOLLARS)
(CONTINUED)

Line No.	DESCRIPTION	Witness	2016	2017	2018	2019	2020	2021	2022	TOTAL
46	Site Host Online Application Portal – O&M	David B. Almeida	54,034	109,899	112,496	114,722	116,857	–	–	508,009
47	E&O Information Technology O&M Contingency	David B. Almeida	27,017	163,813	177,815	181,333	184,707	–	–	734,686
48	<i>Expense Subtotal</i>	<i>David B. Almeida</i>	<i>8,006,263</i>	<i>5,679,293</i>	<i>7,869,988</i>	<i>8,158,146</i>	<i>8,457,535</i>	–	–	38,171,225
49	Program Management Organization									
50	Program Management Organization Labor	Jana R. Corey	2,708,671	4,862,820	6,909,139	7,410,583	6,115,515	–	–	28,006,728
51	Program Management Organization Labor – Additional Years	Jana R. Corey	–	–	–	–	10,166,924	–	–	10,166,924
51	L2 Site Easements (fees and services)	Jana R. Corey	–	322,992	667,206	1,205,760	1,244,149	–	–	3,440,106
52	L2 Site Easements (fees and services) Contingency	Jana R. Corey	–	64,598	133,441	241,152	248,830	–	–	688,021
53	DCFC Site Easements (fees and services)	Jana R. Corey	–	12,972	26,795	48,424	49,966	–	–	138,157
54	DCFC Site Easements (fees and services) Contingency	Jana R. Corey	–	3,243	6,699	12,106	12,491	–	–	34,539
55	Billing and Reporting Integration	Jana R. Corey	1,354,788	–	–	–	–	–	–	1,354,788
56	Billing and Reporting Integration Contingency	Jana R. Corey	677,394	–	–	–	–	–	–	677,394
57	<i>Capital Subtotal</i>	<i>Jana R. Corey</i>	<i>4,740,853</i>	<i>5,266,624</i>	<i>7,743,281</i>	<i>8,918,025</i>	<i>17,837,875</i>	–	–	44,506,658
58	Billing and Reporting Integration (Project Expense Cost)	Jana R. Corey	333,669	–	–	–	–	–	–	333,669
59	Billing and Reporting Integration (Project Expense Cost) Contingency	Jana R. Corey	166,834	–	–	–	–	–	–	166,834
60	Billing and Reporting Integration - O&M	Jana R. Corey	72,418	147,288	150,768	153,752	–	–	–	524,225
61	Billing and Reporting Integration O&M Contingency	Jana R. Corey	36,209	73,644	75,384	76,876	–	–	–	262,113
62	<i>Expense Subtotal</i>	<i>Jana R. Corey</i>	<i>609,129</i>	<i>220,932</i>	<i>226,152</i>	<i>230,628</i>	–	–	–	1,286,841
63										
64	CAPITAL TOTAL	Michael D. Della Penna	9,159,120	52,781,328	104,898,132	184,639,468	198,793,990	432,963	446,281	551,151,282
65	EXPENSE TOTAL	Michael D. Della Penna	8,615,392	10,612,036	18,966,840	29,349,778	25,992,922	4,536,821	4,623,756	102,697,546
66	PROGRAM TOTAL	Michael D. Della Penna	\$17,774,513	\$63,393,364	\$123,864,972	\$213,989,247	\$224,786,912	\$4,969,784	\$5,070,037	\$653,848,828

(a) Equivalent to Tables 6-1 and 6-2, pages 6-3 and 6-4 of February 9, 2015 Prepared Testimony with L2 and DCFC costs broken out.

TABLE B-9^(a)
2016-2022 REVENUE REQUIREMENT REQUEST – ORIGINAL APPLICATION
(THOUSANDS OF DOLLARS)

Line No.	2016	2017	2018	2019	2020	2021	2022
1	\$5,406	\$19,372	\$40,882	\$75,685	\$102,686	\$94,169	\$90,559

(a) Equivalent to Table 7-1, page 7-2 of February 9, 2015 Prepared Testimony.

PACIFIC GAS AND ELECTRIC COMPANY
APPENDIX C
STATEMENT OF QUALIFICATIONS

PACIFIC GAS AND ELECTRIC COMPANY
STATEMENT OF QUALIFICATIONS OF JANA R. COREY

Q 1 Please state your name and business address.

A 1 My name is Jana R. Corey, and my business address is Pacific Gas and Electric Company, 245 Market Street, San Francisco, California.

Q 2 Briefly describe your responsibilities at Pacific Gas and Electric Company (PG&E).

A 2 I am the Director of PG&E's Electrification and Alternative Fuels Department. My responsibilities are to direct PG&E's approach to providing customer value through electrification and customer use of alternative fuels.

Q 3 Please summarize your educational and professional background.

A 3 I received a Bachelor of Science degree in Systems Engineering, and a Master of Science degree in Electrical Engineering, from the University of California, Los Angeles. I also received a Master of Business Administration degree from Stanford Graduate School of Business. I joined PG&E in 1991. From 1991-2000, I held various positions, including Manager, Field Operations and Director of Regulatory Relations. From 2000-2003, I was Director of Strategic Planning. From 2003-2009, I managed PG&E's SmartMeter™ Project. From 2009-2014, I provided strategic guidance to PG&E's Energy Efficiency Program. I am currently the Director of PG&E's Electrification and Alternative Fuels Department.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following sections of the supplemental testimony in support of PG&E's Electric Vehicle Infrastructure and Education Program:

- Section A, "Introduction";
- Section B, "PG&E Phase 1 Compliant Proposal Pursuant to September 4, 2015 Scoping Memo and Ruling":
 - Part 1, "Description";
 - Part 2, "Transition Plan to Phase 2"; and
 - Portions of Part 3, "Capital and Expense Forecast";
- Section C, "PG&E Phase 1 Enhanced Proposal":
 - Part 1, "Description";
 - Part 2, "Transition Plan to Phase 2"; and

1 – Portions of Part 3, “Capital and Expense Forecast”;
2 • Section IV, “Responses to ALJ Ruling Questions”; and
3 • Section V, “Conclusion.”
4 Q 5 Does this conclude your statement of qualifications?
5 A 5 Yes, it does.